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Contribution towards the knowledge of Indian Arachnoidea;
by F. STOLICZKA, Esq., Ph.D., F.G.S. &c.

(With plates XVIII—XX.)

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With the exception of the *CELENTERATA*, and probably the *CRUSTACEA*, few other branches of Indian Zoology have received so little attention as the *ARACHNOIDEA*. It is really surprising to see, how very few species of Indian Arachnoids there are recorded in the leading works on the subject by Walkenaer (*Aptères*) and Koch (*Die Arachniden &c.*), when compared with the great number from other foreign countries, which one would suppose to be in this respect much less known than India. Walkenaer's descriptions of the Indian new species are, besides, often insufficient, to be of much use; they are generally too short for the purpose of specific identification. A good number of Ceylon and some Indian *ARACHNOIDEA* have been, however, carefully described by Koch. Those of the Indian Dutch possessions were, to a large extent, worked out by Dr. Doleschall, and the Mauritius and Madagascar species have been monographed by Vinson. Several additions to this fauna were also lately made by Count Keyserling, Blackwall, and others.

One of the most important works for the study of Indian Arachnoidea is Savigny's excellent figures in the "*Descript. Science de l'Egypte*," although his number of new species will have to be greatly reduced, if Walkenaer's identifications prove to be correct. With the very wide geographical range, which many species of spider are known to possess, I expect Western India will have a great number of identical species with Arabia and Egypt, the Southern portions of the Peninsula with Ceylon and partially also with Mauritius, the Southern Burmese and Malacca country with the Philippine and other islands of the Indian Archipelago. There are undoubtedly some Western Indian species the same as the Arabian, and probably European, but I have as yet so very few materials from that part of the country, that I abstain at present from quoting specific names; a list of them will be given in due time. Of the Arachnoid fauna of Bengal and the North Eastern provinces we scarcely know anything, for only very few species appear to have as yet found access into European collections. I may here remark that the distinction of the faunas which have been pointed out in the vertebrate animals between Western and Eastern India,—the one with an admixture of African, the other with that of Malayan types,—appears to be fully confirmed through the study of the ARACHNOIDEA. It is really remarkable that in examining a collection of spiders from our Eastern frontier, together with another made in Western India, often scarcely a single species will be found to be identical to both parts. Bengal has a strong admixture of Malayan types, and several species are common to it and Assam and Burma. The Western Himalaya mountains possess in the Arachnoid fauna a prominently European character, as their general climate would lead us to expect, the Eastern Himalaya probably contain some Chinese or Malayan types, but of this we know exceedingly little.

It is strange that not only dislike, but a real enmity and ill-feeling against Arachnoids, seems to have taken hold of men's minds. "Unheeded, or regarded with repulsive loathing by the '*cui bono*' people of the present generation" says an able writer* who *did* observe many a magnificent tropical Arachnoid! No doubt, the few species which secrete a poisonous fluid in special glands, and through

* Dr. A. Adams, in *Ann. and Mag. Nat. Hist.*, 1847, XX, p. 289.

its use occasionally become dangerous, are the source of all this ill-feeling which has been extended to the most useful animals. Harmless they are certainly on the whole, and as regards usefulness scarcely surpassed by any other class of animals. They wholly live on insects and destroy a very large number of those which often create great damage to either animal and vegetable life. Thus they are important agents in sustaining a proper balance in the economy of nature, and their usefulness actually increases, by their not being dangerous in such a way, as insects often are.

These are, however, not the only reasons which entitle the ARACHNOIDÆ to a fair share of attention on the part of every observer of nature. Their instinct is often higher developed, than we find it in insects. This instinct not only shews itself in the way in which they obtain their living, but also in the art of weaving in which they may be said to have been the teachers of man. Actually almost their whole life is nothing but a carrying out of clever arrangements, resulting from a certain amount of thought and deliberation. The beauties of colour, the curiosities of form, &c. which they exhibit, are equally remarkable and interesting. It is, therefore, only natural that some of our oldest classic writers have expressed their admiration of the works and the talent, exhibited by Arachnoids, in the most inspiring language, and many a beautiful idea in the mythology of the Greeks and Romans is interwoven with their manners and their mode of life.

It is unnecessary for me to go here into those historical and other accounts, to excite interest and attention to the study of the Arachnoids,—they speak for themselves. At the same time, I believe, I am justified in saying that there are very few branches of zoology, which would reward the zeal of the student with greater success, as regards new forms of animals, than the Arachnoids. Almost everything that we see and observe about us is a novelty to science; for if it is not actually so as to mere form, it is pretty certain to be so as to the real value in the study of geographical distribution, &c.

Several years elapsed since that I began to collect materials for a Monograph of the Indian SCORPIONIDÆ, having in view to initiate the study of the Arachnoids in this country by the description of a group, the animals of which are more generally and better known than common spiders. I found, however, that it would be probably many

years, before I should be able to go on with this work ; but meanwhile I have collected a large number of species from various orders of the class, and out of these I have on this occasion selected a few characteristic species of each family. I have only omitted the aquatic (PYCNOGONIDÆ and COLOPODA) and the parasitic forms (ACARINA). They are too minute to be observed with ease, though of the ACARINA some such species, for instance as those which in very large quantities destroy the leaves of the tea plant, will be worthy of examination. Of the other orders, the PEDIPALPI, (including PSEUDOSCORPIONES) SOLIFUGÆ, PHALANGIDEA and ARANEIDEA, I shall of each describe one or more species. One of the chief objects of this selection of various species, of all of which illustrations* are here given is, as I said, to attract the attention and at the same time also to facilitate the study of the Indian ARACHNOIDEA. I hope that, with the assistance of friends, who will collect those species which they find in their neighbourhood, we may obtain the materials for a work which may form a parallel to that magnificent publication of the Ray Society, "the English spiders" by Mr. Blackwall. The Indian Museum is a safe custody for all these objects, and I shall have already to mention in the present paper a few species, for which I am indebted to Dr. J. Anderson, the Curator of the Indian Museum ; they are species collected by Messrs. Peel, Gregory and Haughton in Assam and adjoining districts. Central India is also very rich and will, I hope, furnish many species of spiders and scorpions.

Order, PEDIPALPI.

This order includes those ARACHNOIDEA in which the palpi are prolonged, often strongly thickened, and terminating with moveable claws or cheliceres. The scorpions may be called the typical forms of the order. One of the most important recent essays on the classification of *Pedipalpi* is by Dr. Peters, printed in the *Monathsberichte* of the Berlin Academy for 1861.

TELYPHONUS, Latr.

The *Telyphoni* externally very much resemble the scorpions, but they have, in place of a segmented tail with a sting at end, a simple

* The measurements are always given in millimeters, so as to avoid differences which may result from the use of a geographical and an English inch.

multi-articulated seta, and are therefore harmless. They also have the feet much longer than the palpi, while in the scorpions the contrary is the case. Lucas published, 1835, a monograph of the genus in Guerins "Magasin de Zoologie," which is simply copied by Gervais in Walkenaer's "Aptères," vol. iii. Koch "Die Arachniden" &c. vol. x, and other authors, have since described several other species. The North American SCORPIONIDÆ have been monographed in 1863 by Mr. Wood (see Journ. Acad. Nat. Sc., Phil., 2nd ser., vol. ii, p. 358).

The species of *Telyphoni* are all remarkably like each other, and it is very difficult to find any striking distinctions between them. In habits they are quite similar to the scorpions, living in damp places under stones &c.; not unusually they are met with in houses.

***Telyphonus Assamensis*, Stol. Pl. XIX, Fig. 1.**

Body depressed, all over finely granulated; general colour above dark brown, blackish on the thorax and palpi, paler on the abdomen and feet; below, the same parts respectively still paler and more distinctly reddish.

The thorax is much longer than broad, surrounded with a thin, raised margin; its front part is sub-triangular, somewhat higher than the rest. The anterior angle, near which the two central eyes are situated is obtuse; the central eyes themselves are slightly prominent and separated from each other by a round smooth tubercle. The region of the lateral eyes is also slightly prominent, two eyes, of which the lower is much the larger, being contiguous, and situated on the front side of the prominence, while the third is the smallest and somewhat more distant. The posterior part of the thorax which is nearly double as long as the anterior has, on the surface, numerous depressions of which a central longitudinal groove is the most conspicuous.

The palpi are about as long as the abdomen, they are very stout. The first moveable segment has 4 spines on the upper inner edge, the last two have a common base and the outer one is the stronger; the upper anterior edge has only one spine, and the lower two subequal ones on a common base. The second segment which is very obliquely articulated to the first has one small spine on the lower front edge; the third has anteriorly one inner long process, and the fourth a smaller internal one, but a much larger external, articulated and slightly curved.

The maxillæ are very short, pointed, horizontal. The feet of the first pair are the thinnest and longest, the metatarsi, [or should these be considered as the tibiæ?] are one long segment, the tarsi are made up of 8 short points and terminate without claws. The other feet are much more robust, the fourth is longer than the third and the third longer than the second, the last two being sub-equal. Each of the feet has only a very short thick metatarsus, and the tarsi consist of four joints, the last of which terminates with two strong claws; on the fourth pair of feet there is usually a fifth segment well defined.

Below, the front part is occupied by the immoveable base or the basal segment of the palpi which forms a broad triangle, separated longitudinally by a groove next to which in front there is a very strong slightly curved spine. The coxæ of the three last pair of feet, (the first being articulated much higher) are broad, almost contiguous, leaving behind the last only a small triangle as the rudiment of the sternum.

The abdomen is much elongated with sub-parallel sides; it consists of a minute first and 8 other larger segments, each of which has about the centre a pair of rounded depressions. Below, the first segment is the longest and the two subsequent ones, are very short; in the centre of the first the sexual opening is situated.

The seta is very slender, longer than the abdomen, attenuated towards the end, and consists of from 35 to 40 short segments, gradually becoming smaller toward, the tip; occasionally some of the middle ones are a little longer than others. The base of the seta is formed of three segments, the last being the longest and cylindrical, the two previous more flattened and very short.

The size of this species varies very much. Young specimens are often found scarcely half an inch long, and others more fully grown which exceed two inches; the last are the largest I have observed; the former also differ in colour, being usually more reddish brown, while older ones are dark or blackish brown.

*Length of the thorax 16·4 m.m.; its width about the middle 10 m.m.
 ————— abdomen 22 m.m.; ————— 11 m.m.

* The nomenclature of the different parts of the body will be fully understood by a reference to the explanation accompanying the plates.

Length of the abdominal seta (including the base)	31.5 m.m.	
„ of the cheliceres, ...	29.0	„ „
„ of one foot of the first pair, ...	57.0	„ „
————— 2nd ———	30.5	„ „
————— 3rd ———	34.0	„ „
————— 4th ———	46.0	„ „

What distinguishes the present species in particular are the various depressions on the thorax, the entirely vertical position of the posterior lateral eyes, the thin raised margin which surrounds the thorax and abdomen, and the long seta with very numerous small segments. *Telyph. spinimanus*, Lucas, of unknown habitat, is very closely allied to our species, but the feet and palpi are in proportion to those of ours shorter, and the tarsi of the first pair of feet not so numerous. Another still more closely allied species is described by Mr. H. C. Wood from China as *Telyph. Stimpsonii* (Proc. Acad. Nat. Sci., Phil., 1861, p. 312); however the palpi, or cheliceres, of this species are described as somewhat different, the denticulation of the first moveable segment being very similar, but the third is larger than the others, which is not exactly the case in our species. The third segment has in *T. Stimpsonii* two minute spines above and the terminal internal process is bifid, and the processes of the fourth point are strongly serrated, while in the Assam species the process is not divided, and the upper spines on the third, as well as the strong serration of the fourth are absent.

Loc. Assam. A large number of specimens of this species has been sent by Messrs. Peel, Haughton and Gregory. These specimens vary in size from half an inch to two inches, but they evidently are only different stages of age of one and the same species. The young specimens are sometimes of a quite uniform reddish brown colour and have comparatively a longer tail than the old ones, while the spines on the second (externally the 1st) segment of the palpi are not perfectly developed. The species lives in damp places under stones, and is also often met with in bath-rooms of houses, in company with true scorpions. My colleague Mr. V. Ball informs me that he also procured a species of a *Telyphonus* in Western Bengal, it may be the same as the present, but more likely another species which Koch describes from the East Indies. Several specimens of this species also exist in the old collection of the Asiatic Society, but no record of localities exists.

Order, SOLIFUGÆ.

Family, GALEODIDÆ.

The animals, forming this division of the *Arachnoidea*, have the general form of true spiders, the abdomen being distinct from the thorax, it is, however, distinctly annulated and not provided at its end with any kind of spinners; the palpi are of a somewhat similar form and length, as the feet. The peculiarity of the abdomen and the palpi has caused the separation of this single family of the GALEODIDÆ into a separate order. The animals are, besides, characterised by the horizontal form of the falces, terminating with an upper fixed and a lower immoveable claw; they only have two eyes, like the *Phalangia*, placed on a common tubercle on the thorax; all of them also appear to have a number of wing-like appendages on the lower side of the anterior portion of the last pair of feet; the physiological functions of these appendages is however, I believe, still unknown; they only live in warm climates.

Koch published a monograph of the family in vol. viii of the "Archiv für Naturgeschichte" 1842, p. 350. The author suggests a division, according to the number of segments of the tarsi, in *Solpuga*, Lichtenstein, *Galeodes*, Olivier, *Aellopus*, Koch, *Rhax*, Hermann and *Gluvia*, Koch. A few additional species are recorded by Gervais in Walkenaer's "Aptères," vol. iii, p. 90, but very few other species appear to have been described since. The Indian species mostly seem to belong to the genus

GALEODES, Oliv.

These have the tarsi of the 2nd and 3rd pair of feet with 2, and those of the 4th with 3 segments. There have been, I think, three species named from India. The most common, said to have been already known to Aristoteles, is the Bengal species *Gal. fatalis*, Herbst. (Ungeflügelte Jns. p. 32, pl. I, fig. 1), which has the cephalothorax nearly triangular, considerably depressed and channeled in front, the appendages of the fourth feet nearly sessile, and these last more hairy than the others. A second species was named by Gervais, *G. brevipes*, and is said to be from Nepaul (Walkenaer, Aptères, vol. iii, p. 87). It is stated to have a short and stout body, a thin lamina in front of the head (cephalothorax) which is nearly

smooth and brownish, the abdomen elongated oval, the feet short and pale reddish, the tarsi brown, and the falces strongly denticulated, blackish. With neither of the species can the one here described from Western Bengal be identified, but a fourth species, apparently, from Central and Northern India, was named by Capt. Hutton, *Gal. (vorax?)* (see Journal Asiatic Society Beng., vol. xi, pt. II, 1842, p. 857). Capt. Hutton gives there a very full and interesting account of the habits and manners of a large species of *Galeodes*. It is said to occur in Northern India, the Punjab and Afghanistan. The usual size is $2\frac{1}{4}$ — $2\frac{3}{4}$ inch., and the abdomen is equal to a thrush's egg. Capt. Hutton's description is in other respects so general, that it would be impossible to identify any species with it; I can only say that neither the form nor the size of the body of the new species, here described, appear to coincide with the account given of *G. (vorax?)*, while the common Indian species, *Gal. fatalis*, is often said to reach the same size as the last, and I rather think it doubtful if they are distinct species.

The *Galeodes* appear to be common all over India, but especially in the South. Mr. H. F. Blanford tells me that he observed them in large numbers and of great size in the Trichinopoly and Arcot districts. It would be especially interesting to observe these, and also those occurring in Western India, and to compare them with the Persian, Arabian, and Egyptian species, from which countries many are known.

***Galeodes orientalis*, Stol. Pl. XVIII, Figs. 4—5.**

♀. General colour above yellowish brown; the terminations of the falces dark brown; eyes black; abdomen blackish grey, pale at the sides; feet yellowish, brown in the middle; the last ante-terminal segments of the palpi brown; below, uniform whitish or yellowish.

The cephalothorax is sub-quadrangular, broader in front than behind, the anterior part is considerably higher than the posterior, sloping in front towards a sharpened, dark brown edge, deeply indented just before the projecting corners; along the whole of the posterior (and partially lateral) edge there is a very deep groove present; the surface is finely granular, and like the median segments covered with longish hairs, those of the abdomen being, however, much more numerous and

shorter than others. The falces are a little longer than the thorax, the two segments being strongly inflated, thickly set with moderately long stiff hairs; and two dark brown longitudinal stripes on the upper side of each are distinct. Their claws are attenuated, slightly incurved; the upper is finely serrated inside, the lower moveable joint being the stronger one; they are unequal, the left pair of the falces being distinctly longer than the right one, and each of them has, above near the claws, one long horny appendage, something of the form of a plume. The palpi are much longer than the entire body from the tip of the falces to the anus, they are very stout; the last or terminal joint is the shortest, inflated at the end, internally supplied with a brownish lamina, which has on the inner side a circular rather prominent field, and next to it on the outer side are two small tubercles, one below the other.

The three segments forming the thorax are distinctly separated and become gradually smaller towards the abdomen; the last pair of feet is by far the longest, then come the third and the first which are nearly of the same size, each of them being about equal to the length of the whole body. The first pair is without claws, the other pairs each possess two slender claws. All the feet are covered with numerous long and very thin hairs, unequal in size; on the first pair and on the palpi some of them are particularly elongated.

The abdomen is elliptical, composed of 9 segments, thickly covered with short hairs, equally narrow in front and behind, where it is slightly raised; in fresh specimens it is somewhat inflated, but in dried ones it becomes more flattened; the ventral side, at the beginning of which the stigmata and the genital opening are situated, has centrally a deep longitudinal groove; the anus is terminal, situated in an almost perpendicular slit; the abdomen is, as stated before, blackish grey above, yellowish on the sides and below.

♂. The male is perfectly similar to the female in form and colouration, but very much smaller; it has the left falces also a little longer than the right ones, and both with similar plume-like appendages; the palpi appear to be in proportion a little longer than they are in the female, (though not so well expressed in the figure, the body having been made a little too long); the penultimate segment is dark brown, the last one has at the end a white skin, slightly emarginated and folded at the terminal edge.

	♀	♂
Length of the cephalothorax, ...	6 m.m.	4 m.m.
Width in front, ...	7 " "	4.5 " "
Length of the three thoracic segments, ...	5 " "	3.5 " "
Length of the abdomen, ...	12 " "	8.5 " "
Width " " " in the middle,.....	8 " "	5 " "
Length of the palpi, ...	43 " "	30 " "
Length of one of the first pair of feet, 33	" "	18.5 " "
————— 2nd	27 " "	17 " "
————— 3rd	32 " "	23 " "
————— 4th	50 " "	33 " "

This species most closely resembles the one figured by Savigny (in the *Exped. de l'Egypt, &c.*) as *G. arenoides*. Koch (*Archiv für Naturgeschichte*, viii, 1842, p. 353) considers it distinct from the European *G. arenoides* of Pallas, and names it *G. Arabs*. This species is, according to Koch, pale yellowish, with two brown stripes on the falces, two large spots on the cephalothorax, and a longitudinal stripe on the body. The present species differs from it by the want of any spots on the cephalothorax and by having in both sexes the palpi much longer in proportion to the body.

Loc. The two figured specimens were obtained by Mr. T. H. Hughes in the Birbhúm district of Western Bengal; I have also obtained lately some specimens from the neighbourhood of Delhi through Mr. R. Mitchell; the species appears to be common there.

Order, PHALANGIDEA.

Family, PHALANGIDÆ.

The PHALANGIDÆ belong to a small division of *Arachnoidea*, which have the cephalothorax not distinctly separated from the abdomen, but, in other respects, greatly approach true spiders; they have the feet usually very long and slender in proportion to the body, and the thorax bears on a prominence two large eyes; in some species two other small accessory eyes are said to exist; the falces consist of two segments the second of which is didactylous at the end, possessing a moveable short claw.

The vitality of the feet of the *Phalangia* has been often noticed, and I would call the attention of any one interested in the subject to

a very interesting paper of Mr. Lindemann in the Bull. Soc. Moscou vol. xxxvii, pt. II, (p. 537). The author describes here the muscular system with some detail, and points out how the *Phalangia* use their two alternate pairs of feet when moving about. The paper is important because this mode of muscular actions as well applies to the largest number of other *Arachnoidea*.

Koch in his "Uebersicht des Arachnidensystems," Nürnberg, 1839, pt. II, referred the *GALEODIDÆ* and *PHALANGIDÆ* to the order *SOLIFUGÆ*, and the genera allied to the *PHALANGIDÆ* he separated into 5 families *TROGULIDÆ*, *SIRONIDÆ*, *GONYLEPTIDÆ*, *COSMETIDÆ* and *OPILIONIDÆ*, the last named being equivalent to the present family *PHALANGIDÆ*, which have the last pair of feet similar to the others, the cheliceres or palpi without spines, &c.

The distinction of genera in this family is now principally based upon the form of the thorax and the spines surrounding the eyes. Strictly speaking they are to a great extent merely convenient sections, for those characters pass so gradually one into the other, that a strict generic definition, in the manner proposed by Koch, is quite impossible. Koch's previous divisions of 12 genera is on the contrary based upon the number of tarsal segments, and seems in some respects preferable; but it is scarcely necessary to say that no single characters alone ought to be taken as leading in such cases.

The English species of this family were monographed by Mr. R. H. Meade (Ann. Mag. Nat. Hist., 1855, vol. xv, p. 393, with additions in vol. vii, 1861, of the same Annals). Koch (Arachniden, vols. ii and viii) described a large number of European and foreign species, but only very few Asiatic, and hardly any Indian ones.

GAGRELLA, *Nov. gen.*

Koch has proposed the genus *LEIOBUNUM* to include those species which have the edges of the eyes smooth, no processes on the palpi and a short body with very long legs. To some other, apparently Asiatic species with one horn on the abdomen and 25 segments of the 1st, 3rd and 4th pair of feet, Koch gave (Arachniden vol. xvi) the name *Acanthonotus*, (see Koch's Uebers. d. Arach., pt. II, 1839), but this name has already been applied in 1835 by Owen to an Amphipoden Crustacean. It seems to me, however, that there is sufficient ground for a new generic separation of the species with a spiny abdomen from *Leiobunum*, for in

this genus the segments of the body are distinctly traceable above, while in *Gagrella* the upper surface is almost uniformly coriaceous, only the terminal portion consisting of distinct segments. As regards the position of the eyes with their smooth margins, and also as regards the form of the palpi, falces, feet, &c., both genera are much alike. In *Gagrella* the metatarsal and tarsal segments are very numerous, differing with the length of the feet; the former vary from 5-8 on the 1st and 3rd pair of feet, and from 7-15 on the 2nd and 4th pair, the latter vary from 20-30 on the 1st and 3rd and from 30 to about 100 on the others; all the joints of the tarsi become very gradually shorter towards their terminations, and each of the tarsal and metatarsal parts is provided at its end with a minute spine. Herbst described from the East Indies a brown *Phalangium monocanthum* which has the thorax posteriorly truncated. Koch described from Bombay an *Acanthonotus niger* (Arach. xvi, p. 61, p. 159, p. 1541) which also differs from the next species in the form of the body.

Gagrella atrata*, Stol. Pl. XVIII, Fig. 2, Pl. XX, Fig. 11.

The whole body is finely granular, above entirely black, below ashy or brownish; the falces or cheliceres, the two terminal segments of the palpi, the anterior small portions of the femora and the tarsi yellowish or pale brown, the rest of the feet, &c. blackish brown.

The cephalothorax is somewhat semilunar, convex, in front provided with two short spines, at the lateral edges emarginated opposite each coxa; posteriorly it is concave, with a double raised margin; the tubercle, bearing the eyes laterally, is situated somewhat below the middle: it is narrow at the base and furrowed along the middle. In front and at the sides of the ocular tubercle there are, besides, some indistinct depressions on the surface of the thorax observable.

The falces are thin, equal to about two-thirds of the length of the palpi, with the terminal claws brown. The palpi are also slender and a little shorter than the body, terminating with a single strong claw.—The lip is very small, the so-called maxillæ rather long, and in common with the projecting bases of the palpi provided with short soft papillæ. The sternum is long, broader posteriorly, slightly concave at the sides and with the front edge, under which the sexual opening is situated, somewhat raised. The coxæ are long, depressed,

* This represents a more common variety with a shorter body, than the one shewn in Fig. 2, Pl. XVIII.

with serrated edges; the feet are long and slender, the second is the longest, a little more than ten times as long as the body, then come the 4th, 3rd, and 1st, the last two being subequal, and a little more than half the length of the first. The single claws are distinct only on the two last pairs of feet. The abdomen is about one-third longer than the thorax, with subparallel sides, and very obtusely pointed posteriorly; the surface is slightly convex, coriaceous, with the segments,—except the last three which are situated low down,—very indistinctly marked; a little before the centre it has a solid almost perpendicular spine. On the lower side there are only five segments very distinctly marked; below the base of the sternum there is on each side a small trachean opening.

Length of the thorax	2-2½ m.m. ;	its width	4.5—5 m.m.,
abdomen	4.7—5.3 m.m. ;		4.5—5 „ „
one foot of the first pair,	.....		22 m.m.
2nd	.....		37 „ „
3rd	.....		20 „ „
4th	.....		32 „ „

Loc. Neighbourhood of Calcutta; I obtained a few specimens in an old native hut, and some others among old branches of wood. The animals are very quick in their movements.

Gagrella signata, *Stol.* Pl. XX, Fig. 10.

The entire body is finely granular, a yellow line begins at the front end of the thorax, divides just before the ocular tubercle, each branch becoming widened and extending along the lateral margins of the abdomen posteriorly; the middle part of the abdomen is purely black, the rest of the thorax and the feet brown with the joints darker, the palpi and falces on the lower surface rather pale, the sternum and abdomen partially ashy.

This species which in general form resembles the former, differs considerably in colouring. The body is rather short, or broadly oval; the cephalothorax has no spines in front, it has, however, a double ridge posteriorly, but the margin is moderately concave. The abdomen has one high and nearly perpendicular spine placed before the centre. The under surface is also quite similar to that of the last species, the coxæ being flattened and serrated on the edges &c., (see fig. 10 a). The most

important distinction consists in the length of the feet ; those of the second pair being the longest, nearly 18 times longer than the body, the tarsi are equal in length to the each preceding segment respectively ; the first pair of feet is scarcely longer than one half of the second, and is the strongest ; the 4th comes next to the second but is much shorter, while the 3rd is only little shorter than the first.

Length of the thorax 2.7 m.m. ; its width posteriorly 6 m.m.

abdomen	5.2 m.m. ;	5.5 ,, ,,
one of the first pair of feet	.....	50 m. m.
2nd	.....	95 ,, ,,
3rd	.....	41 ,, ,,
4th	.....	63 ,, ,,

Loc. This species was sent by Mr. Peel to the Indian Museum, from Sibsaugur in Assam ; it appears to be very rare ; I have not observed it anywhere about Calcutta.

Order, ARANACEA.

Family, LINYPHIIDÆ.

HERSILIA, Savigny.

This genus was established for a species, *H. caudata*, from Egypt, collected during Napoleon's expedition to that country. Lucas published in 1836 in Guerins "Magasin de Zoologie" some valuable notes on the genus, pointing out its peculiarities as regards the position of the eyes, the great length of the slender feet and that of the two posterior appendages of the spinners. Lucas also described two species from the Malabar coast, *H. indica* and *Savignyi*, but Walkenaer (Aptères, I, p. 372,) considers the latter to be a young specimen of the former, though (l. cit., vol. iii, p. 433) he again does not seem to be certain of his former suggestion. The same author separates here *Hersilia* into two groups which he calls "Heteropodes" and "Orthopodes," in the former the third pair of feet being very short, in the latter subequal to the others. The species which I shall here describe belongs to the former group ; it is quite distinct from either of the two forms noticed by Lucas, but it is rather similar to a species described by Blackwall from one of the Cape de Verde Islands (St. Jago) ; I shall, however, point out the distinction of both (see Ann. and Mag. Nat. Hist., 1863, 3rd ser., vol. xvi, p. 80).

It is difficult to find an appropriate position for the genus, but from the general appearance of the body and the distribution of the eyes, it seems to me that *Hersilia* has a great relation to *Linyphia*. Its habits are, however, very similar to those of *Philodromus*, and the same is the case as regards the proportionate length of the feet; it may, therefore, be also correctly placed near, or in, the family THOMISIDÆ.

There are several species found all through India, Burma and the Malacca straits. I have observed them mostly on palm-trees, the bark of which they much resemble in colouring; they are sometimes also called mangoe spiders.

***Hersilia Calcuttensis*, Stoll. Pl. XX., Fig. 9.**

♀. Cephalothorax scarcely broader than long, the ocular region narrow and strongly elevated, the posterior region with the lateral margins strongly curved, with one longitudinal central and two transverse fine grooves; the anterior part is the smaller. The grooves and the margins are partially dark brownish, the rest is yellowish, thickly covered with short white hairs.

The eyes are in exactly the same position as in the type species; the two anterior on each side form with the posterior laterals an ascending triangle, and the anterior laterals are very small, situated in front and below the posterior laterals; of all the eyes the anterior centrals are the largest. The immediate region round each eye is dark brown.

The falces are shorter than the sternum, sub-cylindrical, at the base rather contracted, pale brown with moderate dark brown claws.

The lip is broadly semicircular, short; the maxillæ somewhat higher, thick at the base, attenuated towards their ends and strongly converging. The palpi are thin, more than double the length of the falces; they are yellowish with black tips; the lip and maxillæ are a little darker than the other organs.

The sternum is almost broader than long, flat, greyish brown, thickly set with hairs, anteriorly emarginated, posteriorly obtuse. The feet are slender and very long, the first being the longest, then the second, which is only a little shorter than the fourth, and then comes the third which is about equal to one-half of one of the second pair. The colour is pale yellowish with dark terminations to the joint. No bands are traceable.

The abdomen is oval, posteriorly broader and more inflated, obtusely pointed at the extreme end; the anterior edge slightly covers the thorax. The general colour is a fawn or pale brown, with very numerous equally distributed white dots; a dark brown band extends from the anterior edge to about the middle of the abdomen, or more than half of its length, and at the end it is provided with short processes. Laterally, from the anterior edge, a thin zigzag brownish stripe with one blackish dot at each angle runs to the anus. The lower side is of a uniform greyish fawn colour, and thickly covered with whitish hairs. The epigynum is slightly prominent, brownish, with a thickened white posterior margin. The outer appendages of the spinners equal in length to the body; they consist of three joints, the first being very small, the second about three times as long as the former and the third somewhat more than three times as long as the second, gradually attenuating into a point. The middle pairs of spinners extend only to half the length of the second joint.

Length of thorax 3 m.m.; its width in the middle 3 m.m.

——— abdomen 6 „ „ ; ————— 4.5 „ „

——— of one foot of the first pair, ... 22 m.m.

——— 2nd — ... 20.5 „ „

——— 3rd — ... 8.5-9 „ „

——— 4th — ... 19 „ „

From Blackwall's *H. versicolor* this species differs by having the second pair of feet almost quite as long as the first, by the want of whitish bands on the feet and the different markings of the thorax and abdomen, the latter possessing a number of dark spots extending from the posterior end of the dark longitudinal band to the spinners.

Loc. Neighbourhood of Calcutta; apparently very rare, only one full grown specimen having been met with during a period of two years collecting of *Arachnoidea* in this vicinity; it was caught on the wall of a house. I subsequently observed another young specimen in my own house; it moved about either forward or sideward, flatly pressed to the wall, exactly like a *Philodromus*, and appeared to be very shy. Like the young of *Philodromus*, this young *Hersilia* was more hairy than the full grown animals are.

*Family, LYCOSIDÆ.**DOLOMEDES*, Latreille.

The species of this genus are chiefly characterised by the arrangement of their eyes, of which the four anterior are small and in one line, while the four posterior form a trapezoid, narrower in front than behind. Some of the species have short feet and in general character resemble the *Lycosæ*, with which the disposition of the eyes mostly agrees; other species have long feet and resemble the *Philodromi* of the THOMISIDÆ, or the *Nephilæ* of the EPEIRIDÆ. I rather think that a few good generic, or subgeneric, types will have to be distinguished among the forms now referred to *Dolomedes*, but my present very scanty materials do not permit me to enter into the details of this question. I shall note only one species which appears to be particularly interesting.

***Dolomedes longimanus*, Stol. Pl. XX, Fig. 3.**

♀. The cephalothorax is large, more than half the length of the abdomen, roundish oval, slightly convex, narrowly truncated, and sloping in front and behind; yellowish brown with dark brown margins, and a pair of rather broad longitudinal bands of the same colour in the middle.

The cephalic region is very little elevated, and not distinctly separated from the posterior, which has a short groove in the centre. The four small anterior eyes are on the front side, they are grouped in two pairs though not well defined; the four posterior, much larger eyes form, as usually, a trapezoid, the anteriors being the smaller ones, and placed nearer to each other than the posteriors.

The falcæ are cylindrical, little shorter than the sternum; with small claws; they are yellowish with a longitudinal broad streak of a brown colour.

The lip is subquadrate, broader than long, sub-truncate in front; the maxillæ are longer than broad, about double the length of the lip, very little broader at their terminations; the palpi are inserted at their upper bases, they are thin, the 2nd segment being the longest, and next comes the 5th; all these organs are pale yellowish, covered like the rest of the body with short hairs, only a few of them being blackish.

The sternum is oval, truncate in front, obtusely pointed behind, hairy,

yellowish with a brown, partially interrupted streak near the margin, opposite the thickened coxæ of each of the three first pair of feet. All these are remarkably slender, and as regards proportioned length rather different from those usually met with in other species of *Dolomedes*. The first pair is by far the longest, the 2nd and 4th are subequal, and the third is a little longer than one half of the 4th.

The abdomen is sub-cylindrical, about half as long again as the thorax, but narrow, truncate, and slightly covering the base of the former with its anterior edge which is provided with a number of stiff short hairs. The centre is occupied by a brown streak attenuating posteriorly into a point; the remaining portion of the upper surface has also a brownish tinge but there are numerous greenish white shining dots on it; the sides possess a few darker oblique transverse blotches and are bounded above by an undulating whitish margin; below, the surface is pale yellowish brown with two narrow, whitish, somewhat raised lines, beginning at the sexual opening and converging towards the spinners which are terminal.

Length of cephalothorax 4 m.m.; its width in the middle 4 m.m.

———— abdomen 7 „ „; ————— 3 „ „

———— one foot of the 1st pair 35 m.m.

———— 2nd ——— 25 „ „

———— 3rd ——— 15 „ „

———— 4th ——— 28 „ „

This is a very peculiar species of *Dolomedes*; it entirely agrees with this genus in the disposition of the eyes, the general form of the body, the length of the falces, the form of the lip and maxillæ &c., all characters upon which genera of Arachnoids are almost solely based; but the feet are those of a *Nephila*, very slender, the first pair being the longest, while in *Dolomedes* the fourth is usually the longest, or at least sub-equal to the first. The shortness of the feet of the 3rd pair is also remarkable, but as there are several species of *Dolomedes* known with equally long feet, I rather prefer placing the species in this genus than proposing a new one, especially as I am at present only in possession of a single specimen.

Loc. Neighbourhood of Calcutta, apparently a very rare form; I obtained it a few years ago in the botanic garden on the leaf of a tree, but never met again with a second specimen.

*Family SALTICIDÆ.***SPHASUS, Walck.**

Blackwall classifies the species of this genus in the family LYCOSIDÆ, but the short truncate form of the cephalothorax, with the unequal eyes disposed in front of it, seems to me to indicate a much greater relation to the SALTICIDÆ than to the last named family. I have observed several species in various parts of India; they generally hunt after insects among grasses between which they jump about exactly like do the species of *Salticus* on walls, they sometimes also form a small loose snare; some of them defend themselves furiously when caught with the hand, and if released they drop supporting themselves by a single thread. Walckenaer in his work (*Insect. Aptères*, vol. i, p. 376), characterizes a species *S. indicus*, which was sent to him from Bengal with the following words "abdomen ferrugineux, bordé de noir; corselet et pattes ferrugineux." It is impossible to identify a species from such a description, for the colour of specimens, when not well preserved, very much changes in spirit. I have not seen any species of that colouration, and very likely the specimen from which the above description was taken, was first dried and afterwards put in spirit, in which case a reference to general colouration is as good as worthless. The green colours of the *Sphasi*, and also of the *Thomisi*, very rapidly fade away in spirit, changing to pale or greyish brown.

***Sphasus viridanus*, Stol., Pl. XX, Fig. 1.**

♀ Cephalothorax oval with the cephalic part high, convex, narrower anteriorly than posteriorly; the thoracic part is much broader, with convex sides and with a deep groove in the middle, in continuation of the two grooves which separate it from the former; both parts are uniform pale green, with two small, brown, lateral spots about the middle of the upper surface, and some other equally small dark green dots, irregularly distributed over the surface; hairs very few and short. On the front side a broadish, dark green line runs down perpendicularly from each of the first pair of eyes to the base of the falces and one similar line is seen laterally; the lower corners at the base of the falces are purplish.

The eyes are situated close together on a roundish, upper anterior protuberance of the thorax which is reddish, or rather violet brown,

and thickly covered with short, depressed, gray hairs. The two anterior eyes which are situated on the front surface are very small, those of the second pair placed near the edges of the thorax are the largest, and the posterior, arranged in a curve, are of median size.

The falces are long, pyramidal, thick at their base, becoming gradually thinner towards their ends; they are of the same green colour as the thorax which has, below and externally on each side where the falces are articulated, a small brown spot at the edge; the claws of the falces are comparatively very small and pale brown.

The lip is green, long, narrow, with an attenuated and pointed termination; it is a little shorter than the maxillæ, and these again a little shorter than the mandibles. The maxillæ are dilated at the base where the palpi are inserted on the outer side, somewhat contracted in the middle and again slightly broader at their ends, which from a pale green gradually pass into a brownish hue. The palpi are thin, provided with short black hairs.

The sternum is grass green, small, depressed, somewhat heart-shaped, being anteriorly slightly indented. The legs are pale green, with numerous scattered black hairs which, as likewise those on the sternum, originate from smaller or larger blackish tubercles; they become much longer on the tibiæ and tarsi, than they are on the femora. The first pair of feet is the longest, the second comes next, but it only slightly differs in length; then comes the fourth and at last the third, which is also only a little shorter than the fourth. The inferior central portions of the femora of the first pair are distinctly carmine red, and a slight tinge of this colour is also observable on the femora of the second pair. The ends of all the tarsi become brownish and each terminate with two short black claws.

The abdomen is pyramidal, distinctly separated from the body, mostly elevated at its anterior end, and partially covering the thorax, broadest near the middle and then very gradually tapering posteriorly to a point, on which the anal appendages slightly project. It is of a uniform yellowish or sometimes bright green colour, with some lateral stripes or corrugations posteriorly, extending over the whole breadth of the abdomen. About one-fifth distant from the anterior end is a silvery white, horse shoe shaped mark, formed of four somewhat raised

dots, and extending posteriorly on either side, until the white stripe gradually disappears; this abdominal white stripe is only seen in full grown specimens. The genital opening lies between two small, green tubercles, and the trachean opercula are large, oval, lateral, quite flat, posteriorly white margined.

Length of cephalothorax 6 m.m.; its width about the middle 4.5 m.m.

abdomen	8	„ „	anteriorly	4.0	„ „
one foot of the 1st pair	32	m.m.			
2nd	30	„ „			
3rd	23	„ „			
4th	24.6	„ „			

This, as likewise the next species, differs from most of the European forms of *Sphasus* by the elongated narrow lip, but the pyramidal shape of the falces, the arrangement of the eyes and the whole form of the body agree with the type of the genus.

Loc. Neighbourhood of Calcutta; appears to be rare, three specimens were found while hunting after insects between the large leaves of a low shrub. The male was not observed.

***Sphasus similaris*, Stol. Pl. XX, Fig. 2.**

Cephalothorax suboval, truncate in front and behind, very high, with convex sloping sides, and slightly narrower at the ocular region; yellowish, covered with very short brownish hairs which form two parallel longitudinal lines along the centre; and two other similar ones are also partially conspicuous on the sides of the thorax.

The eyes are situated on the upper anterior part of the thorax. The four posterior ones form, as usually, a curve with the convexity directed backwards; the external ones are placed laterally in front, they are more distant than those of the previous species. The two eyes of the second row are situated in front of the curve, they are rather close together and are the largest; the four posterior ones are smaller and sub-equal; a round black spot extends from each eye into the central space surrounded by them. The two anterior eyes are closer together than those of the second row and are very small. The entire region occupied by the eyes is covered with short silvery hairs. A conspicuous but very fine dark line extends from each of the small anterior eyes towards the margin of the thorax, and is continued on

the falces; there is also a minute dark spot on the external angle of the thorax where the falces articulate.

The falces are pyramidal in shape, vertical, tapering gradually towards their ends; they are greenish with a brownish tinge near the articulation of the small claws.

The maxillæ are elongated, very little broader and roundish at their terminations, somewhat shorter than the falces; the palpi are articulated at their external bases, but the maxillæ are only thicker at this place, not being dilated in front. The lip is somewhat shorter than the maxillæ, slightly wider about the middle and conspicuously contracted and produced at the end.

The sternum is rather roundish, truncated in front and somewhat pointed posteriorly; conspicuously indented at the point of articulation of each coxa. The first pair of feet is the longest, the 2nd and 4th are sometimes perfectly equal, sometimes the 2nd is a trifle longer; the 3rd pair is only little shorter, than either of the two last named ones. The sternum, lips, maxillæ and coxæ are yellowish green, the femora are purely green, and all feet are covered with very fine whitish and with larger stiff black hairs. The tibiæ and tarsi have a brownish or violet tint, and the black hairs on them are long and spiny. The terminal part of the tibiæ of the last pair of feet is almost black. Each of the femora have on the internal side two black longitudinal lines, of which the anterior one is the more conspicuous; above, there are also two or three obsolete blackish lines.

The abdomen is much elongated, thickest in front, but scarcely covering the edge of the thorax, and gradually tapering towards the oval end; it is wholly covered with very fine hairs. The front part is pure silvery white, the rest is pale brown. Two very thin conspicuous white lines, internally margined with dark brown, and forming an elongated ellipse, unite in the middle and continue as a single white central line towards the end; this posterior part of the line becomes occasionally obsolete. Three white lines originate anteriorly and partially laterally, and converge together above and posteriorly, but they do not reach the centre, and are on both sides margined with dark brown. Laterally there are very numerous short white stripes which also become obsolete towards the posterior end. Below is a longitudinal central black band, accompanied on either side by a slightly narrower silvery one.

The spinners are blackish, the genital opening on an obtuse dark brown tubercle, and the trachean opercula are large, suboval and very pale brown.

♀ Length of the thorax 4 m.m.; its width about the middle 2.5 m.m.

————— abdomen 7 „ „ ————— anteriorly 3.0 „ „

————— one of the 1st pair of feet 15 m.m.

————— 2nd ————— 14.5 „ „

————— 3rd ————— 12 „ „

————— 4th ————— 12.5 „ „

♂ The male is in colouring entirely similar to the female, but is often considerably smaller. The cephalothorax is shorter and stouter in proportion, and the abdomen thinner than in the ♀. The terminal joints of the palpes are at the base strongly inflated, in young specimens greenish or brownish, in full grown ones perfectly black, below with a large opening fitted out with soft skin and a horny laterally projecting black flagellum; the whole is surrounded with various longer and shorter, black, stiff hairs (see pl. xx, fig. 2c).

Length of the thorax .. 3 m.m.; its width about the middle 2.5 m.m.

————— abdomen 6 „ „ ————— anteriorly 2.5 „ „

Length of one of the 1st pair of feet, ... 13 m.m.

————— 2nd ————— 12.5 „ „

————— 3rd ————— 10.5 „ „

————— 4th ————— 11 „ „

For some time I regarded this species as identical with *Sphasus lepidus*, Blackw. (Ann. Mag. Nat. Hist. 1864, 3rd ser., vol. xiv, p. 36), but judging from that author's description, it must be considered as distinct, differing by the markings of the cephalothorax and of the abdomen, by the elongated form of the lip, etc.

Loc. Neighbourhood of Calcutta, very common (in April and May) among grasses, hunting after insects etc.; it occasionally makes a very loose snare.

Family, THOMISIDÆ.

I hardly think a distinction necessary between *Thomisus* and *Xysticus* in the manner as proposed by Koch, and accepted by several arachnologists. The unequal size of the eyes is in no way associated with the greater length of the 3rd pair of feet, as pointed out by Prash (see

Zool. Bot. Gesellsch., Wien, vol. xvi, p. 605). I have compared several species regarding this point, and I believe that the distinction has hardly subgeneric value; it is not at all constant, neither is the truncate form of the cephalothorax. With reference to Blackwall's new genus *Pasithea*,* I may mention that this name has been used as a generic denomination already several times; once in botany and twice (by Lamouroux and Lea) in recent and fossil Zoology. The name must be replaced by a new one, though, judging from the description, it is very difficult to trace its generic distinction from *Sphasus*.

The species of this family are readily recognized by their depressed form and the feet strongly bent forward (at least the two anterior pairs). They form two natural groups, one represented by *Thomisus* which has the two last pairs of feet much shorter than the two anterior ones, and the other by *Philodromus* which has all the feet of more equal or subequal size. To this last genus belongs one of our large spiders which is very often seen on the walls of houses &c. &c.; it runs about with the greatest rapidity, and daily consumes a large number of insects, being especially active at night. There are besides a great number of other similar species which occur in our neighbourhood. Several new genera have been lately established through the examination of the Swedish and N. German species belonging to this group.

Thomisus (Xysticus) pugilis, Stål., Pl. XIX, Fig. 3.

♀ Cephalothorax large, subquadrangular, somewhat narrow anteriorly, broader in the middle, with sloping sides and convex edges; uniform pale yellowish green; the front is truncated with projecting edges, above and laterally marbled with brown, and near the upper edge with some more or less confluent whitish spots. The whole of the thorax is covered with very minute pustules from which originate very short white hairs.

The eyes are disposed on the front of the coloured fore part of the thorax. The first pair is situated about the middle of the vertical front, the eyes being rather distant from each other; those of the second middle pair are still more distant than those

* Ann. Mag. Nat. Hist., 1858, 3rd ser. I., p. 427.

of the first, but nearly of equal size and situated on the upper front edge. The anterior laterals are the largest and situated before the upper lateral projections of the front part of the thorax; those constituting the posterior lateral pair are placed on the same projections near their points, behind and a little below.

The falces are short, thick, greenish, covered with black hairs, and provided with small brownish claws.

The lip is elongated, slightly narrower at the end than at the base. The mandibles are about one-third longer than the lip, narrow, slightly expanded, rounded at the terminations, and thickened at the base, where on the upper external side the thickened palpi are articulated.

The sternum is small, oval, slightly truncated in front, the coxæ of the feet strongly swollen and projecting above the surface of the sternum. The first and second pair of feet are subequal and longer than the third and fourth, being again subequal and not much above half the length of the former. They are like the sternum yellowish green, with a brownish tint towards their terminations; the end of the tibiæ and tarsi have on the inner side a number of strong short spines of a brown colour. The tarsi each have two black strong claws and two opposite smaller, pale coloured ones; on the fourth feet each tarsus, however, has 6 minute black claws.

The abdomen is roundish in front, reaching partially over the base of the thorax; it widens gradually, until in about two-thirds the distance from the front edge, it attains its greatest breadth, marked on either side by a projecting angle; from this it rapidly contracts towards the abdominal point. The colour is uniform pale greenish yellow, with two minute brown dots near each of the angles of the greatest breadth. The edge of the anterior part is finely granulated and some little distance from it runs a row of similar fine granules separated from the marginal row by a groove; in the middle of the abdomen are five minute depressions arranged in form of a triangle with the point directed towards the front. The posterior abdominal end is marked with a few transverse, slightly undulating ridges. The lower surface is on the sides finely corrugated, in the middle flattened, with two slightly converging rows of five minute impressions, situated between the genital pore and the spinners. The trachean opercula are lateral, small, having posteriorly a transverse slit at the end. Of the spinners the posterior pair

is the larger, for the single anterior protuberance has no opening, and there are, therefore, as in the *Epeiridæ*, only two pairs of true spinners.

Length of the thorax 2.7 m.m. ; its width 4 m.m.

————— abdomen 5.5 „ „ 6 „ „

————— one foot of the 1st pair, ... 14.5 m.m.

————— 2nd „ ... 14 „ „

————— 3rd „ ... 7 „ „

————— 4th „ ... 8.5 „ „

♂ The male is extremely small, almost minute when compared with the ♀ ; it is represented on pl. xix, fig. 3c, in its natural size ; the colour and general form does not in any particular respect differ from that of the ♀ ; the palpi are stout, short, the terminal segment being sub-globular, with a large opening below into which the rather thick flagellum is coiled (fig. 3 d) ; the hairs all round the same are blackish and short.

This belongs to the few unicoloured species of the type of *Th. calycinus*, Linn. (*citreus*, Walck.). It has the anterior pair of lateral eyes somewhat larger than the others, but this does not appear, as I have already stated, to be a sufficient reason for instituting a separate genus under the name of *Xysticus*.

Blackwall (Ann. Mag. Nat. Hist., vol. xiv, 3rd ser., p. 38) describes from India another species, *Thom. tuberosus* which is of a brownish colour.

Loc. I found four specimens of this beautiful species inside flowers in the Eden Garden at Calcutta ; not only the form of the thorax but also its coloration strongly reminds one of a minute crab, the backward movements are also those of a characteristic crab-spider ; the specimens generally hide between the anthers where they watch for insects.

Thomisus (Xysticus) elongatus, Stål. Pl. XX, Fig. 6.

♀ Cephalothorax quadrangular, convex, the ocular portion in front truncate, a little narrowed with projecting corners, the posterior lateral margins of the thorax being slightly curved ; a broad white band runs posteriorly, from the antero-lateral corners, it occupies the whole length of the thorax, and is slightly indented with black on each side of its base ; the sloping flanks are brown, and the margins again white with a very thin brown stripe at the extreme edges. The first pair of the

middle, and the corresponding pair of the lateral eyes, are placed on the perpendicular front side of the thorax; the former are on a slight protuberance close together, the latter which are a little larger near the edges below the projecting corners; on the other side, still nearer to the outer point, the posterior laterals are situated, being directed backwards; the posterior central eyes are above, near, but not quite on the front ridge, they are nearly twice as far apart from each other than the anterior centrals; in size they hardly differ.

The falces are very short, broad at the base, gradually tapering towards the tips which are furnished with small simple claws; their length is about equal to that of the sternum, the colour is pale brown.

The lip is rather elongate, broad, subtruncate in front; the maxillæ are about one-third longer than the lip, thick at the base, narrower at the tips with which they converge towards each other.

The palpi are stout, a little more than double the length of the maxillæ; both are pale yellowish brown, thickly set with short stiff hairs towards their ends.

The sternum is subtriangular, truncate in front with roundish corners, gradually becoming narrower posteriorly. The feet of the 1st and 2nd pair are among the largest, and subequal the first being very little longer; those of the 3rd and 4th are again subequal, the fourth which is about equal to only one-half the length of the second pair being slightly longer than the third. The femora are long, sub-cylindrical, very finely granulated; the terminal portions of the tibiæ, and the tarsi of the two first pairs are on the internal side provided with stiff depressed hairs of a brownish colour. Each tarsus of the four anterior feet terminates with four claws, two being stout and black and two smaller, pale brown; on the four posterior feet the claws are much more slender than on the anterior.

The abdomen is sub-cylindrical, slightly narrowed and truncate in front, where it partially covers the base of the thorax; in the middle it is somewhat inflated; pointed and slightly elevated at the posterior end. The general colour is greyish white, produced by numerous short hairs intermixed with others which are stiff and black. There is a conspicuous dark central band with a white stripe on either side; the dark band includes four pairs of indistinct blackish spots, beginning about the middle; near the end is a dark X mark, formed of minute

yellowish dots surrounded with black, and a number of similar spots of yellow and black occupies the posterior end. The upper sides are marked with numerous raised lines, converging towards the terminal upper portion of the abdomen. Below there are a number of similar raised lines, separated from the former by a broad whitish band; they begin at the side of the trachean opercula and converge towards the spinners which are short but prominent, very close together and some distance from the terminal end. Below, the median region is occupied by a similar greyish band as above; the genital opening is very small, furnished on each side with a minute tubercle; the trachean opercula are large, sub-quadrangular, brownish, with a transverse slit at the posterior end.

Length of thorax 2·5 m.m.; its width in the middle 2·15 m.m.

———— abdomen 6 " " ————— 2·3 " "

Length of one of the first pair of feet, ——— 10·5 m.m.

————— 2nd ————— 10 " "

————— 3rd ————— 4·5 " "

————— 4th ————— 5·2 " "

Loc. Neighbourhood of Calcutta; on trunks of trees, apparently very rare.

Thomisus Peelianus, Stol. Pl. XX, Fig. 4.

♀ The cephalothorax of this species is broadly oval, slightly convex, truncate in front, narrower on the sides of the ocular region, and with strongly curved lateral edges; brown above with the margins all round pale yellowish white, and covered with very short hairs.

The anterior part of the thorax, where the eyes are situated, is not markedly raised; the eyes are arranged in two rows, the anterior ones lie on the slope, the posterior above, near the edge. The four middle eyes are small, equal, and form a regular square; the anterior laterals are sensibly larger than any of the middle ones; the posterior laterals exceed the size of the latter by a mere trifle, they are directed backwards, forming with the posterior centrals an easy curve, convex in front. The falces are short, stout, sub-triangular, broad at the base, on the inner side rapidly sloping towards the end, where a large number of short thick hairs exists; they are white, the short fangs being, however, pale brown and their joints pale whitish.

The lip is narrow, longer than broad, subtruncate at the tip; the maxillæ are of about double the length of the lip, also narrow,

converging towards their ends and roundish on the outer anterior edges ; their base is slightly thickened above where the palpi are inserted. The latter are short and thick ; their second joint is the longest, and next to it in length comes the fifth. The lip, maxillæ, and three first joints of the palpi are pure white, the two last joints brownish and thickly set with stiff, dark hairs.

The sternum is almost regularly oval, slightly truncate in front, flat, white. The coxæ are short and thick ; the feet of the two first pairs are almost perfectly equal, the femora are stout and in front granulated. The tarsi have only two joints of which the terminal is much the shorter one. The feet of the two posterior pairs are subequal among themselves, the third being the shorter and not much more than equal to one half the length of one anterior foot. The joints of the tarsi of the two posterior pairs are subequal, the terminal being little shorter than the other. All the feet are white, the anterior halves of the tibiæ (proper) and the tarsi of the four anterior feet are brown, and thickly set with short dark setæ. Each foot terminates with four claws, two large black ones and two smaller opposite pale brown ones ; on the last pair of feet the claws become rather indistinct.

The abdomen is much depressed, narrower and truncate in front, slightly covering the base of the thorax with its edge which bears four small tubercles. Along the lateral and front margin runs a double raised, slightly undulating ridge. The postero-lateral corners are each furnished with two large white tubercles, and a similar large boss occupies the anal end below, while above between the two pairs of tubercles the surface is transversely corrugated, and furnished again with two pairs of shining brown tubercles, the anterior ones being a little more distant than the posteriors. The middle part of the abdomen is excavated, with the central portion again somewhat elevated and studded over with a few impressions for the attachment of muscles. Except the five white and four shining brown tubercles and a white longitudinal central line, the rest of the upper surface is greyish brown. The lower side of the abdomen is white, it has in the centre a few transverse curved sulci ; laterally it is irregularly corrugated, supplied with a narrow prominent ridge and some posterior tubercles ; the epigynum is scarcely elevated, brownish ; the trachean slits transverse, very distinct and lateral to it, somewhat distant from the anterior

end ; the spinners are short, situated on the lower terminal edge and surrounded with an oval raised margin.

Length of the thorax 6·5 m.m. ; its width about the middle, 6·5 m.m.

abdomen 7·5 „ „ ;	near the posterior end,	9 „ „
at the anterior end, ...	3·8 „ „	
one of the first pair of feet	20 „ „	
2nd	19·5 „ „	
3rd	10·5 „ „	
4th	11 „ „	

Loc. This beautiful species was sent, with a large number of other novelties, to the Indian Museum by Mr. A. C. Peel, an assiduous collector and observer of natural history objects ; it was obtained at Sibsagur, Western Assam.

Family, *SCYTODIDÆ*.*

SCYTODES, Latr.

This genus belongs to the tribe of the *Senoculina* of Blackwall, characterized by the presence of only six eyes. In *Scytodes* these eyes are distributed in pairs on the anterior part of the thorax, one pair lies in front, and one pair on either side somewhat posteriorly compared to the former.

While other *Senoculina*, like *Dysdera* and *Segestria*, are, as regards the form of the body, mostly related to the *LYCOSIDÆ* (especially to *Lycosa*), and to the *THOMISIDÆ*, the *Scytodes* in general character seem to be closely allied to some species of the *THERIDIDÆ*, an opinion which, if I am not mistaken, has been advanced by Walkenaer. With reference to this point, however, and also concerning the divisions of the *Octonoculina* and *Senoculina* being natural, great doubts may be expressed. I believe that the general character of the body ought in such cases to be considered as more important in a classificatory point of view, than the single character relating to the position of the eyes. The distinction according to these is no doubt convenient, but not always natural. *Scytodes*, when observed sitting in its natural position, has like *Thomisus* the three anterior pair of feet directed forwards, and the posterior stretched obliquely from the body, but also with the intention of a forward movement. In this position the spiders greatly resemble

* Vide "*SCYTODIFORMES*," and genus *Scytoda* in Eu. Simon's "Hist. nat. des Araignées," Paris, 1864, p. 43.

some *Philodromi*, so much so, that they could even easily be mistaken one for the other; they are rather sluggish in their habits, and defend themselves with the feet and falces, when disturbed in their quiet position; they only spin a few threads but no net.

***Scytodes propinqua*, Stol. Pl. XIX., Fig. 4.**

♀ The cephalothorax is regularly oval, tumid, highest near the posterior end, higher and equal to, or usually a little longer and wider than, the abdomen, except in old female specimens in which the abdomen becomes slightly larger than the thorax. The general colour is brownish yellow, with two longitudinal dark brown lines extending from each lateral pair of eyes backwards, these undulating lines being more distinct than those at the middle, and at the sides of the thorax which are generally irregularly streaked or marbled with brown. Younger specimens have a very fine, but distinct, central, longitudinal dark line, and two or three similar continuous, curved lines near and parallel to the posterior end and to the sides of the thorax.

The central pair of eyes is on a broad prominence like a rostrum, and the laterals are also placed on oblique prominences which are usually black.

The falces are short and stout, cylindrical, yellowish, with rudimentary brownish claws.

The lip is elongated, obtusely pointed at the end; the maxillæ, narrow, converging, and little shorter than the falces; they are not particularly thickened at the base where the palpi are inserted, the latter being thin and, like the former organs, yellowish with a few black hairs near their tips.

The sternum is elongated, oval, flat with minute prominences opposite each coxa, all of which are thickened. The feet are of considerable length and slender, they are yellowish, like the sternum: the femora each have, below, two longitudinal dark lines, and the tarsi possess two segments, the last being the shorter, terminating with two black thin claws. Young specimens have the joints of the various segments of the feet brown.

The abdomen is roundish oval, quite separated from the thorax and not covering its base, very obtusely pointed behind; it is yellowish white, like the rest of the body thickly covered with hairs, in the

middle with a few pairs of dark dots, to each of which laterally a transverse dark line corresponds. In young specimens there are in the central region usually two single dots, one behind the other; then follow two or three pairs, the dots in each becoming gradually more distant from each other; the lateral lines are very distinct. In full grown specimens the middle dots are in pairs, the posterior very distinct, and the lateral stripes are also replaced by a few dots; only the lower side is uniform whitish; the epigynium is very small and yellowish, the trachean opercula large, brown and situated next to it, the spinners terminal and very little prominent.

Length of thorax ... 3·5 m.m. ; its width posteriorly .. 2·5 m.m.
 ——— abdomen, 3·8 „ „ ; ——— in the middle 2·7 „ „
 ——— one foot of the 1st pair 17 m.m.
 ——— 2nd — 14·5 „ „
 ——— 3rd — 11 „ „
 ——— 4th — 14 „ „

This species very much resembles in form and in the general character of colouring the European *Sc. thoracica* (Blackwall's English Spiders, pt. II, p. 380), which has, however, proportionately much longer feet, provided with brown rings, and a somewhat different arrangement of the brown marks on the thorax and on the abdomen.

Loc. Neighbourhood of Calcutta; on shady or dark places between old foliage and in houses. A similar species also occurs in Burmah and at Penang.

Family EPEIRIDÆ.

The spiders included in this family more agree with each other in their general habits, than in any particular structure of the body the form of which is extremely variable. The artful nets made by the *Epeira diadema* are so well known, that I only need to recall the name of this common European species. As a rule, the first pair of feet is the longest, the third always the smallest, the second and fourth are subequal; but in some of the forms with the abdomen hardened above, or strongly coriaceous, the fourth pair is equal to, or exceptionally even a little longer, than the first. The eight eyes are always arranged in two rows: the middle four generally form a more or less regular square, and the lateral eyes are in pairs generally close to each other; there is usually no great difference in the size of the eyes.

The last review of the genera of the EPEIRIDÆ, or ORBITELÆ, was given by Count Eng. Keyserling in 1865, (Verhandlungen der Zool. Bot. Gesellsch., Wien, vol. xv, p. 799 etc.). The author characterized eleven genera which he considered as sufficient for the classification of our then existing materials of the family, but several of the tropical forms will probably have to form generic additions. I possess from India several such species, which I hope to compare more carefully as soon as our means of reference to the literature on the Arachnoidea are a little more completed. The late Doleschall already added several genera from the Indian Archipelago, and the examination of the North German, Swedish and Russian spiders are rapidly increasing the number.

Argiopes may be considered only as a section, or a subgenus of *Epeira*, because the most important points of the organisation are in both almost identical. It is impossible to fix a proper limit between the elongated form of the cephalothorax of *Epeira* and the rounded one of *Argyopes*, unless we would agree to separate what is called *Epeira* by Keyserling in at least 4 or 5 other genera, and even that number would hardly be sufficient. There is one character in which most of the species classed under *Argyopes* agree, that is, the lateral eyes are contiguous and the anterior of them are very small; but there are again among the true *Epeiræ* similar and even greater variations in the position of the eyes to be met with. Further, most of the *Argiopes* have the tarsi, especially those of the front feet longer than the tibiæ, but cases of this also occur among other *Epeiræ*. Some of Koch's generic divisions should also be retained only as subgenera of *Epeira*.

I shall here give descriptions of a few species belonging to the following genera: *Epeira*, (subg. *Argyopes*), *Nephila*, *Tetragnatha*, *Meta* and *Gastracantha*. In collecting various EPEIRIDÆ I was particularly struck with the very great scarcity of male specimens; for among about 200 specimens belonging to about 30 species there were not more than 5 or 6 males.

***Epeira (Argyopes) stellata*, Stol. Pl. XVIII, Fig. 6.**

♀ Cephalothorax suboval, truncate in front, posteriorly slightly emarginated; the ocular or cephalic portion is half as wide as the thoracic which is somewhat tumid, and separated from the former by oblique converging grooves nearly reaching to the centre. The sides of the thoracic portion are slightly curved, the upper surface is laterally convex and

somewhat depressed in the middle; the entire surface of the cephalothorax is uniformly covered with short depressed silvery white hairs. Each pair of eyes is situated on a small, but distinct brownish prominence; those of the posterior middle pair are placed somewhat more distant than those of the anterior, and all of them are pretty nearly equal in size; the anterior laterals are very small, situated almost wholly on the under-side of the small tubercles, which bear laterally the hinder pair of the lateral eyes.

The falcæ are subcylindrical, brown, with short claws and very minute scattered hairs; when in a vertical position they project a trifle beyond the maxillæ, just preventing them from becoming visible in a front view. The lip is short, semicircular, with a very small protuberance in the centre of the internal front side. The maxillæ are twice the size of the lip, thick and hairy on the inner edges. The palpes are rather thickened, like the two former organs yellowish, towards the end covered with somewhat elongated black hairs, and tipped with small black claws.

The sternum is elliptical, rather wide, very slightly emarginated in front, and terminates posteriorly with a small obtuse prominence; it is pale yellowish in the middle, and brownish laterally. A small elongated tubercle is seen near the margin, opposite each of the three anterior pairs of feet.

The first pair of feet is the longest, the third the shortest, being a little longer than one half of the former; the second and fourth pairs are very nearly equal. All the feet are covered with very small silvery white hairs and with scattered shorter and longer blackish spines. The coxæ and femora are yellowish, the tibiæ and tarsi of the two first pairs are banded alternately with brown and yellow; on the third pair, however, these bands become very indistinct, and on the fourth they are replaced by a uniform dark brown hue. The two claws on each of the tarsi are very small, black.

The abdomen is oval, elongated, convex in front, covering the cephalothorax to a considerable extent. Above, the anterior portion, marked with a few minute pits, is silvery white; of the same colour is a longitudinal central band, narrowing posteriorly, and on each side there are four large subquadangular spots on a black ground, separated by short transverse yellow bands; the last of the four spots is almost obsolete in young specimens. The sides are striped and freckled with

white and yellow. The lower side is black with a yellow elliptical mark, extending from the genital opening towards the anus, and crossed in the middle by a slightly curved band; above this are a few yellow spots. The genital opening is, as usually, situated near the anterior end in a brown hard prominence; the trachean opercula are laterally placed, a little in front of it, they are large and of subtriangular shape; the spinners have five large, black appendages.

Length of the thorax 4 m.m.; its width (posteriorly) 3.5 m.m.

———— abdomen 9.5 „ „ ————— (in the middle) 6 „ „

Length of one foot of the 1st pair 23 m.m.

———— 2nd — 20.8 „ „

———— 3rd — 13 „ „

———— 4th — 19.5 „ „

Loc. Two females, slightly differing in size, were found on bushes in the Sundarbans, a few miles south of Port Canning.

One of the nearest allied species of this *Argyopes* is described by Savigny in the Zoology of the Exped. d' Egypte, (Arachnides, pl. ii, fig. 5), but the abdomen of this one is marked with continuous cross bands and all the feet possess brown and pale bands.

Epeira (Argyopes) mammillaris, Stol. Pl. XX, Fig. 12.

♀ Cephalothorax depressed, not much longer than broad, anteriorly narrow and slightly elevated, the elevation of the ocular region continuing posteriorly as a short ridge which terminates near the centre; the lateral margins are posteriorly curved, and the posterior end is broadly truncated. The whole thorax is thickly covered with very short white hairs, it is brown with a yellow spot in the middle and a smaller one in the centre of the posterior edge; the lateral margins are also yellow.

A small prominence in front bears the four central eyes, two above and two below; they form a regular square and are of equal size; the lateral eyes are a little smaller, than the centrals, they are situated on minute tubercles, and are very little more distant from the posterior centrals than these from each other.

The palces are short, stout, brown with blackish claws.

The lip is rather large, roundish at the end and with almost perpendicular sides; the maxillæ are nearly twice as long, narrow at the base, dilated and roundish towards their ends; both are brown.

The palpi are yellowish with a few blackish hairs on the two terminal joints.

The sternum is almost as broad as long, distinctly emarginated at the base of the lip, and roundish posteriorly. Opposite each coxa of the three first pairs of feet is one tubercle, the first on each side being the largest. The colour of the sternum and of the coxæ, which are strongly thickened, is a yellowish brown. The proportion in the length of the feet is as 1, 4, 2, 3, the second and fourth being nearly equal, and the third not more than half the length of the first; in all, the tarsi are longer than the respective tibial joints, they are brownish yellow with the terminal portions of all the joints dark brown.

The abdomen is nearly thrice as long as the thorax, depressed, broadly truncate in front, widest in the middle and obtusely pointed at the posterior end. The posterior halves of the lateral margins each possesses five tubercles: of the three anterior the middle one is the largest, while the two last near the posterior end are very small. The upper surface is of a uniform, dirty brown colour, thickly covered with short white hairs, and provided with a large number of minute dots of which 4 on the anterior part are especially conspicuous; all round the margins the small pits for the attachment of muscles are more numerous than in the middle. The lower side is also of the same general colour as the upper, with a broad, yellowish, longitudinal band extending from the epigynum to the spinners, and surrounding the latter. In the centre of this band is a blackish subquadrangular spot with two pairs of dots, one below the other, one single dot is placed below its lower and another above its upper margin. The trachean opercula are large, shining brown, and so is also a triangular space between them; the pulmonary slits are very narrow. The epigynum is transversely elongated, moderately prominent, brown with black margins round the two sexual pores which lie side by side. The spinners converge with their terminations, forming a broad pointed cone.

Length of thorax 6 m.m. ; its width in the middle 6 m.m.

———— abdomen 12 „ „ ; ————— 11 „ „

———— one foot of the first pair 25.5 m. m.

———— 2nd ——— 24 „ „

———— 3rd ——— 11.5 „ „

———— 4th ——— 24 „ „

This species may be considered as the eastern representative of *Epeira sericea* (Walkenaer, Insect. Apt., vol. ii, p. 116), which is found in Egypt, and almost through the whole of Northern and Western Africa; the former differs from the latter by a shorter thorax and the want of numerous bands on the feet; the abdomen is also not emargined in front, and the anterior lateral edges are not serrated, what they always appear to be in the African form.

Loc. Gowalparah in Western Assam. One specimen was sent with many other interesting forms of insects by Mr. H. Haughton; the species also occurs in Burmah and all along the Malay Peninsula.

***Epeira braminica*, Stol. Pl. XX, Fig. 8.**

♀. Cephalothorax longer than broad, convex, narrowest at the ocular region, widest near the posterior end which is again somewhat contracted at its extreme termination; pale yellowish with three longitudinal brown stripes, one central and one marginal on either side.

Ocular region truncate and roundish, not elevated at all; the four central eyes form a small square in the middle, and the laterals are almost contiguous, distant, placed at the corners. The falces are somewhat elongated, thick at the base, and gradually tapering towards the ends, yellowish, laterally at the base with a short longitudinal stripe; the claws are rather long and brown. The length of the falces is nearly equal to that of the sternum.

The lip is short, semicircular, obtusely pointed in the centre; the maxillæ are much higher, broader and rounded; the palpi are inserted at their upper bases which are not specially thickened;—all these organs are pale yellowish, the last have a few black short hairs near their ends, and the former a number of similar hairs at their inner edges.

The sternum is a little longer than broad, truncate anteriorly, and rapidly terminating with a short point posteriorly, with a small tubercle opposite the insertion of each of the three anterior pairs of feet; it is black with a yellowish central longitudinal stripe. The feet are rather short and stout, furnished with very short, white hairs, and some longish black spines; the first pair is the longest, the 2nd and 4th are subequal, and the 3rd the shortest; the length of one of the third pair is equal to two thirds of one of the first; all feet are yellowish, with the terminal ends of the femora, tibiæ and tarsi blackish brown. The tarsi are thin, the claws very short and black.

The abdomen is almost regularly oviform, tumid, slightly covering the base of the thorax, nearly twice as long as the last; it is covered with numerous short, depressed, white hairs. The upper side is brown, with a central longitudinal yellowish mark, in shape very much resembling the from of a sword; about the middle there are two white dots on each side, one below the other. The sides are pale brown, and the central portion below dark brown, with two undulating longitudinal yellow marks, extending from the epiginium to the spinners. The latter have five appendages, one single largest in front and two pairs next to it posteriorly. The trachean opercula are subtriangular, large, situated near each other at the front edge. The genital opening lies some distance from this edge, on the inside of a dark brown strongly raised claw, resting on an inflated, pale coloured tubercle.

Length of the thorax 3 m.m.; its width about the middle 2.4 m.m.

———— abdomen 8 „ „ ; ————— 5.5 „ „

Length of one of the 1st pair of feet 15 m.m.

———— 2nd ————— 13.8 „ „

———— 3rd ————— 9.5 „ „

———— 4th ————— 11 „ „

The species is in many respects allied to the well known *E. apoclisæ*, which has a geographical distribution from North America and Sweden to Egypt; it is, however, readily distinguished from it by the shorter thorax in proportion to its length, and by its markings above and below; the colouring of the abdomen is also somewhat different.

Loc. Calcutta. The only female was found in a godown, and although I had repeatedly instituted a search after this beautiful species, I never obtained a second specimen of it.

***Epeira hirsutula*, Stål. Pl. XX, Fig. 13.**

♀ Cephalothorax slightly longer than broad, rather high and convex, narrowest in front and gradually becoming wider, being widest near the posterior end which is broadly truncate;—general colour uniform brownish yellow.

Ocular region slightly elevated at the frontal superior edge. Of the central eyes those of the anterior pair are a little closer together than the posterior ones; the laterals are somewhat smaller, nearly contiguous, but distant from the former.

The falces are as compared with the size of the spider large, considerably higher than the front side of the thorax, yellowish, with brown short and thick claws.

The lip is very small, semicircular; the maxillæ considerably larger, wide at the base, subtriangular, and converging with their ends; the palpi are inserted at the upper bases, they are equal to double the length of the falces. The lip is brownish, the maxillæ and palpi yellowish, the last being only at their extreme tips brown.

The sternum is sub-oval, somewhat truncate in front, very little longer than the falces, and of greyish brown colour. The feet are of moderate size, their proportionate length is as 1, 2, 4, 3, the 2nd and 4th being subequal, and the 3rd equal to two-thirds the length of the fourth; all are uniformly yellowish, brownish at the tips of the tarsi, each of which is supplied with 4 very minute claws.

Abdomen sub-pentagonal, truncate in front and slightly covering the base of the thorax, widest and subangular in the middle, obtusely pointed and somewhat raised posteriorly. The general colour is brownish, marked all over with small white specks, posteriorly with a central longitudinal somewhat branching line, and laterally with a few indistinct transverse dark spots. The lower side is brownish, with four silvery white spots, forming a quadrangle between the epiginium and the spinners; the former is very little, the latter are strongly prominent, and of considerable length. The whole of the body, including the thorax and the feet, is thickly covered with somewhat elongated white hairs.

Length of thorax 1.8 m.m. ; its width posteriorly 1.6 m.m.

----- abdomen 4.5 ,, ,, ; ----- 4 ,, ,,

Length of one foot of the 1st pair 9 m.m.

----- 2nd ----- 8.5 ,, ,,

----- 3rd ----- 5.8 ,, ,,

----- 4th ----- 7.8 ,, ,,

Loc. Calcutta; a rare species on walls in the interior of houses; the male has not yet been observed, it seems to be very scarce.

NEPHILA, Leach.

The species of this genus may be considered intermediate between *Epeira* and *Tetragnatha*, as regards the form of the body as well as that

of the falces, but the feet are much longer than in the former genus, the tarsi being also longer than the tibiæ, as has likewise been noticed in the subgenus *Argyopes*.

***Nephila angustata*, Stol. Pl. XX, Fig. 7.**

♀ Cephalothorax longer than broad, anteriorly bluntly truncated and somewhat narrow, two converging furrows separating the ocular portion from the posterior one, which has the lateral edges curved and tinged with brown, as likewise the central region, being distinctly depressed, while the rest of the surface is pale yellowish and convex.

The eyes are placed quite near the anterior end, but not on special tubercles; of the four middle ones the anterior are situated very little closer to each other than the posterior, they are all of equal size. The laterals are smaller, almost touching each other, arranged in about the same line as the posterior middle ones, but more distant from them than these among themselves.

The falces are cylindrical, thick, not much longer than broad, yellowish with brown ends and short brown claws; their length is equal to that of the sternum; when in a vertical position they project a little beyond the maxillæ.

The lip is thick, narrow, with parallel sides, obtusely rounded in front; the maxillæ are about twice as long as the lip, somewhat narrower at their base and curved outward, being concave on the outer and convex on the inner side; both are dark brown. The palpes are thin, greenish, with long blackish hairs towards their ends.

The sternum is narrow, truncate in front and pointed behind, brown, with small tubercles opposite each of the first and the third pair of feet. All feet are remarkably slender, the first pair being longer than the second, then comes the fourth; the third being, as is usual, the shortest and about equal to one half of the second pair; all are greenish in fresh specimens, becoming yellowish after they had been for a time in spirit, with the tibial and tarsal joints brown; in some specimens the tarsi are distinctly brown even in a fresh state.

The abdomen is elongated, subcylindrical, high, anteriorly with two obtusely rounded black protuberances, strongly projecting over the end of the cephalothorax; the posterior end is obtusely pointed, elevated above the spinners and concentrically corrugated. The general

colour, above, is silvery white, posteriorly with a yellowish or golden tinge. There are three parallel longitudinal black stripes, the central one connected about the middle with each lateral one by two short and diverging, dark stripes.

The sides are marked each with one long white stripe, originating anteriorly and terminating at the spinners; a second white but short stripe begins near the posterior end; the rest of the sides and the surface below is black. On the latter there are three longitudinal white stripes between the sexual opening and the spinners; the central one of these is often rather indistinct, the middle portion of the abdomen possessing a conspicuous emerald green spot, while in continuation of the lateral stripes there are two white dots on either side of the spinners. The epigynum is blackish brown, slightly prominent, posteriorly provided with two minute points.

Length of the cephalothorax 5 m.m.; its width in the middle 4 m.m.

----- abdomen 8.5 ,, ,, ; ----- 4 ,, ,,

Length of one foot of the first pair 24.4 m.m.

----- 2nd ----- 24 ,, ,,

----- 3rd ----- 12.5 ,, ,,

----- 4th ----- 16 ,, ,,

Loc. Neighbourhood of Calcutta, not common on bushes or high grasses; it has also been obtained by Mr. Peel at Sibsagor in Assam. All the specimens that I have examined were females.

Epeira (Nephila?) cicatrosa, Stol. Pl. XX, Fig. 5.

♀ The cephalothorax is longer than broad, tumid, the ocular portion being the smaller one, oval, well margined; the posterior is somewhat depressed along the longitudinal line, and convex on either side of it; the general colour is pale greenish, with a broad brown band along the centre, and two stripes one parallel to each of the curved margins; a short streak runs from each of the posterior eyes disappearing posteriorly at the end of the ocular region of the thorax.

The central eyes are rather distant, the anterior being a little smaller than the posterior; the lateral eyes are close together, but distinctly separated, and placed on about the same line with the posterior centrals, but nearer to these than they themselves are from the anterior centrals.

The falces are cylindrical, somewhat longer than broad, pale greenish slightly narrowed towards the tips, and furnished with short brown claws.

The lip is very small, semicircular; the maxillæ much larger, sub-quadrangular, flattened, roundish anteriorly, slightly widened at the base where the thin palpi are inserted; the former two organs are brownish, the latter pale yellowish or greenish with a few black stiff hairs towards their tips.

The sternum is longer, than broad, truncate anteriorly, pointed posteriorly, with a slight prominence opposite the base of the lip and that of each coxa of the three anterior pairs of feet; it is deep black, generally with a longitudinal central yellowish streak, and on its entire surface thickly covered with short hairs.

The feet do not vary greatly in length: the first is the longest, the second and fourth are almost perfectly equal, but not much shorter than the first, and the third is about equal to three-fifths of the first; they are greenish with minute black dots, giving origin to longer and shorter black hairs, and with a few longitudinal black lines on the femora, especially conspicuous on their upper sides.

The abdomen is somewhat longer than the thorax, the base of which it slightly covers with its truncated front edge. On the anterior upper portion it has two pairs of pointed prominences, those of the posterior pair being a little nearer to each other than the anterior. These prominences are, at least on the inner sides, black, but the surface between and all round them is marbled and streaked with white, reddish and partially with black; the surface near the posterior end, which is raised above the spinners, is blackish brown with a few paler, very fine transverse lines. The sides of the body are finely streaked with black and white. The inferior side is blackish brown with a white streak on each side, running in a slight curve from the sexual opening to the spinners; besides these, two small distant white spots are to be observed below the epiginium, two pairs of similar spots in the middle between it and the spinners, two larger white spots on each side of the spinners and two white streaks running from the prominent spinners to the end of the body. The epiginium is very little raised and brown.

Length of thorax 2.7 m.m.; its width in the middle 1.9 m.m.

———— abdomen 4 „ ; ————— 2.2 „

———— one of the first pair of feet 11 m.m.

Length of one of the 2nd pair of feet, ...	10	m.m.
----- 3rd -----	.....	6.8 ,, ,,
----- 4th -----	.....	10 ,, ,,

It is difficult to place this species in either of the genera *Nephila* or *Epeira*, being intermediate between both, and showing that the distinction of the two genera is by no means so strict as would be desirable; it has the proportionate length of the feet of an *Epeira* and the long falces of a *Nephila*; to the last genus it, however, shews in other respects a greater relation than to the former.

Loc. Found in shady places between hedges and framework about Calcutta, chiefly in gardens. I first obtained this very interesting form through my friend, Mr. H. Bennertz, who procured a large number of specimens, all of which were females and mostly full grown. It builds a large snare, and lives to a certain extent social, but it does not grow to a large size.

META, Koch.

The species of this genus are in external appearance perfectly similar to those of *Tetragnatha*, the principal distinction of *Meta* being the position of each of the two lateral eyes on a common tubercle. To the species quoted by Keyserling (Zool. bot. Gesellsch., Wien, 1868, XV, p. 830) as belonging to this genus I shall add presently one to all appearance new species, from the neighbourhood of Calcutta.

Meta gracilis, Stol. Pl. XIX, Fig. 2.

♀ Cephalothorax elongated, scarcely half as long as the greatest width at the middle; ocular portion narrow, elevated above and shorter than the thoracic portion, from which it is separated by converging grooves; the thoracic part is slightly convex, impressed in the centre, with convex sloping sides and very little curved margins.

The eyes are placed near the anterior end of the cephalothorax; of the middle pairs the two anterior eyes are smaller and closer together, than the posterior. Each two lateral eyes are nearly contiguous, situated on small prominences, the posteriors being a little larger and more distant from each other than are the anteriors. The distance

between the lateral and the posterior central eyes is almost greater than that between the latter and the anterior centrals.

The falces are little shorter than the thorax, somewhat depressed, furnished with very strong, slightly curved claws lying in grooves provided with strongly serrated edges.

The lip is small, roundish at the tip; the maxillæ narrow, flattened, with their terminations curved outwards, and nearly double the length of the lip. The palpi are thin, about half as long as the falces, thickly set with blackish hairs, especially towards their ends.

The sternum is oval, somewhat elongated, sub-truncate in front and pointed behind, slightly emarginated at the places where the coxæ are inserted; the latter being rather thickened. The feet are of the usual proportionate length, the first being by far the longest (equal to double and a half the length of the abdomen and thorax together); then comes the fourth, then the second, the third being scarcely longer than the abdomen. The colour of all the parts mentioned is a pale brown, darker about the region of the eyes, on the falces, on the lip and at the terminal joints of the feet; the maxillæ are pale.

The abdomen is subcylindrical, perfectly separated from the thorax, anteriorly slightly thicker, and posteriorly curved upwards: dark brown, finely reticulated with a silvery whiteness throughout; along the centre of the sides runs a narrow thin black line, accompanied above and below by a distinctly whitish undulating line; another white line is seen along the lower margin of the abdomen, and the central portion of the latter is occupied by a black band; a very conspicuous white spot is situated laterally near the base of the spinners, which are dark brown and very little prominent; the epiginium is small, the trachean opercula large, subtriangular, rather distant from the anterior end; both are of a light brown colour.

Length of cephalothorax 2.4 m.m. ; its width 1.3 m.m.

———— abdomen 6.7 „ ; ——— 1.5 „

———— of the first pair of feet 22 m.m.

———— 2nd ——— 13 „

———— 3rd ——— 7 „

———— 4th ——— 13 „

Loc. The only specimen was found near Calcutta, in an old tree where it had formed a small loosely built snare.

TETRAGNATHA, Walck.

A large number of the Indian species belonging to this genus are distinguished by a long, narrow and subcylindrical body, closely resembling in this respect, as well as in the bright colouring, the European *Tetrag. extensa*, Linné. Count Keyserling gave a review of most of the known species of *Tetragnatha* (Zool. Bot. Gesellesch., Wien, 1868, XV, p. 835 etc.). He enumerates 15 species, accompanied by detailed descriptions; most of them are European or American. The review is, however, not to be considered a complete one, for there are numerous other species described by A. Adams (Ann. Mag. Nat. Hist., 2nd ser., vol. vii), by Doleschall, Blackwall, and others. The only question regarding these species to decide would be, whether they really are *Tetragnathæ*, or whether they belong to any of the allied genera. Blackwall described lately an Indian species, *Tet. decorata* in Ann. Mag. Nat. Hist., 1864, 3rd ser., vol. xiv, p. 44.

***Tetragnatha irridesceus*, Stol. Pl. XVIII. Fig. 3.**

♀ Cephalothorax about one-third longer than broad, having the ocular portion considerably narrowed posteriorly; the thoracic oval, with curved sides and slightly more contracted at the base, depressed about the centre towards which numerous dark brown lines converge; the general colour is light, almost fleshy brown, and the whole surface covered with very short whitish hairs.

The eyes are placed near the anterior truncate edge of the thorax in two almost parallel rows, very slightly curved forward; those of the anterior middle pair are a little more prominent than others, and the anterior lateral eyes are the smallest, the remaining being of pretty nearly equal size.

The falces are long, subcylindrical, somewhat depressed, light brown with strong dark brown claws, lying in grooves with serrated edges.

The lip is short, semicircular with the edge somewhat bent outward; the maxillæ are about three times as long as the lip, and half the length of the falces, somewhat dilated and curved outwards at their ends; the palpi are filiform inserted above at the base of the maxillæ which are, however, not thickened at this place.

The sternum is heart-shaped, elongated, posteriorly pointed, slightly convex, smooth and indented at the places of insertion of the coxæ.

The feet are very slender, clothed with thin whitish hairs, and a few longer blackish spines intermixed; their proportionate length is the same which characterizes the genus; they are like the sternum light brown with the terminations of the joints somewhat darker. The abdomen is regularly cylindrical, slightly turned upwards at the end, a little more than three times as long as broad; blackish, finely reticulated with silvery white and green dots; above, a very narrow black line runs along the centre, giving off other short oblique lines; the ventral portion is occupied by a longitudinal broad black band, which extends over the slightly prominent epigynum and the spinners.

♂ The male does not appear to differ in size from the female; it has the falces a little stronger, the cephalothorax somewhat darker brown; and on the abdomen of the specimen, examined, I did not observe any dark dorsal line. The last joint of the palpi is long, strongly thickened, and gradually attenuating towards the end; the flagellum is short, simply curved and slightly thickened terminally.

♂ Length of the cephalothorax	1.7 m.m.	its width	
		in the middle	1 m.m.
———— abdomen	 4.3	„ „ ;	1 „ „
———— one of the	1st pair of feet, ..	21	m.m.
————	2nd „	 12	„ „
————	3rd „	 6.5	„ „
————	4th „	 10	„ „

This species appears to be the eastern representative of the common European *T. extensa*, which is also known from Africa and Western Asia; it can be, however, readily distinguished from the latter by the greater length of the cylindrical abdomen in proportion to that of the thorax, by the smooth sternum, less diverging falces, &c.

Loc. Neighbourhood of Calcutta; rare, on foliage.

GASTRACANTHA, Latr.

Subgenus, ISACANTHA, Sim. (Hist. nat. des Araignées, p. 286.)

Simon suggests the formation of a number of subgenera of *Gastracantha* according to the number and proportionate length of the spines of the abdomen. In the present form there is one pair of spines on either side and one pair posteriorly, all the spines being very nearly, or perfectly, equal in length.

Gastracantha (Isacantha) Canningensis, Stoll.

Pl. XVIII., Fig. 1.

♀ Cephalothorax quadrangular, nearly twice as broad as long; above in the middle, at the anterior and posterior edges, and at the anterior corners somewhat prominent; upper surface covered with small hairs; uniform brown.

The anterior central eyes are situated in front on the median projection of the thorax, the posterior ones are somewhat higher, and very little more distant from each other, than are the former among themselves. The lateral eyes are placed together on each of the lateral projections; the anterior ones are much the largest of all, and the posterior ones so small as to be hardly conspicuous. The falces are short, very thick, inflated, vertical, with strong articulated claws, fitting into a groove with finely serrated edges; both are brown, the claws blackish. The lip is minute, semicircular, slightly angular at the tip; the maxillæ much larger, thick, roundish, bent outwards; the palpi are rather short, inserted at the upper external bases of the former, both are light brown. The sternum is subtrigonal, somewhat elongated, truncate in front and pointed behind. The feet of the fourth pair are the longest, about equal to the total length of the body, those of the first pair are somewhat shorter, the second again shorter, and the third the smallest. All the coxæ are very short and thick, the femora broadly flattened with rather sharpened anterior edges. The general colour of the feet is brown, the coxæ and the thickened ends of the joints being blackish, and covered with short hairs. The claws of the tarsi are very small and black.

The abdomen is above coriaceous, hardened, anteriorly with a convex margin, and a very small central notch; on each side are two thick protuberances, inflated and turned upwards, and terminally provided with very small dark spines, the anterior of which is slightly smaller than the posterior; the posterior margin is entire, slightly rounded, and higher than the anal end which terminates with two thick diverging almost horizontal processes, each also supplied with a small spine. The whole surface is punctured and covered with very short hairs: along the anterior margin there are eight black oval impressions; one, the largest, is situated between each of the lateral processes, and nine are along the posterior margin, the first of them beginning on

either side at the hinder portion of the posterior lateral process. In the middle of the carpace there are two rounded depressions between the two anterior lateral processes, and two between the posterior ones, somewhat more distant than the former. Above each of the lower impressions there is a large yellowish spot, and above this laterally a very small groove. In the central longitudinal line of the carpace are placed four little punctures, one below the other, and then two pairs of equally small ones, situated between the two posterior lateral processes. Beside these there are a number of other small punctures or impressions, but they do not appear to be regular and constant. The prevalent colour of the upper surface of the carpace is yellowish brown, tinged with a reddish hue, produced by short hairs; these being, however, very easily worn off.

The lower surface is strongly convex, deeply corrugated with narrow furrows; the five spinners are black surrounded by a raised roundish oval edge; a very strong vertical and pointed protuberance is situated in front of the genital opening, with the roundish trachean opercula laterally and deeply placed.

Length of cephalothorax 1.5 m.m.; its width 3.2 m.m.

———— abdomen without posterior spines 5.5 „ „

Width of the same measured between the two lateral spines 8 m.m.

Length of one of the 1st pair of feet 5 „ „

———— 2nd ————— 4.8 „ „

———— 3rd ————— 4.5 „ „

———— 4th ————— 7.5 „ „

This species appears closely to resemble *Gast. helva*, Black., (Ann. Mag. Nat. Hist., XIV, p. 42) from which it can be distinguished by the thick processes with very short spines, the want of streaks on their underside, nine equally large, instead of ten, posterior marginal depressions of which the two central ones are minute, by the vertical process before the genital opening, by the want of a longitudinal furrow on the thorax, etc.

Loc. A single specimen was found a few miles South of Port Canning (S. E. of Calcutta) on bushes, where it had made a small snare between the leaves.

EXPLANATION OF PLATES.

PLATE XVIII.

Fig. 1.* ♀ *Gastracantha (Isacantha) Canningensis*, Stol., p. 248; 1, upper-, 1 a, lower view, 1 b, frontal view of a portion of the cephalothorax, shewing the relative position of the eyes, the size of the falces, &c.;—all figures are drawn to twice the natural size.

Fig. 2. *Gagrella atrata*, Stol., p. 213; 2, upper view in natural size; 2 a, and 2 b, upper and lower views in four times the natural size; 2 c, side view of the smooth ocular tubercle with one eye.

Fig. 3. ♂ *Tetragnatha iridescens*, Stol., p. 246; 3, upper view, natural size; 3 a, upper view of the front part of the thorax with the two rows of eyes, the falces and palpi &c., enlarged 6 times; 3 b, side view of the terminal joint of the left palpus with the small flagellum coiled in, enlarged 8 times.

Fig. 4-5. ♂ & ♀ *Galeodes orientalis*, Stol., p. 209; 4 and 5, upper views in natural size; 4 a, internal view of the metatarsal and tarsal joints of the left palpus, three times the natural size; 4 b, side view of the tarsal joint only; 5 a, side view of the body of the ♀, shewing the appendage of one of the falces and 6 appendages of the coxa and femur; 5 b, view of the internal side of the tarsal joint of ♀, three times natural size.

Fig. 6. ♀, *Epeira (Argyopes) stellata*, Stol., p. 234; 6, upper view, natural size; 6 a, frontal view of the ocular portion of the thorax, shewing the distribution of the eyes, the proportions of the falces, length of the palpi, &c.

PLATE XIX.

Fig. 1. *Telyphonus Assamensis*, Stol., p. 205; 1, upper view of a full grown specimen, natural size; 1 a, front view of the mouth with the penultimate joints of the cheliceres; 1 b, upper view of the anterior portion of the thorax; 1 c, basal joints of the cheliceres, as seen below; 1 d, the three right lateral eyes in their relative position; (1 a—c, are enlarged twice the natural size); 1 e, a portion of the metatarsal and the tarsal segments with the terminal claws of the second left foot; 1 f, a portion of the metatarsal and the tarsal segments of the first right foot;—(1 e and 1 f, are enlarged four times).

Fig. 2. ♀ *Meta gracilis*, Stol., p. 244; 2, upper-, 2 a, lower view, twice the natural dimensions; 2 b, ocular portion of the thorax shewing the disposition of the eyes; 2 c, view of the falces and the maxillæ and also shewing the outline of the lip,—(2 b and 2 c, are enlarged four times).

Fig. 3. ♀ *Thomisus pugilis*, Stol., p. 225; 3, upper view; 3 a, frontal view of the ocular portion of the thorax with the falces and palpi; 3 b, shewing the sternum, the lip, maxillæ and the two basal joints of the palpi; all figures are enlarged three times; 3 c, upper view, natural size; 3 d, inner view of the two terminal segments of the right palpus with the long flagellum coiled in a large cavity.

Fig. 4. ♀ *Scytodes propinqua*, Stol., p. 232; 4, 4 a, 4 b, upper-, side-and lower views, twice the natural size; 4 c, frontal view of the ocular portion of the thorax, shewing the position of the eyes,—enlarged four times.

PLATE XX.

Fig. 1. ♀ *Sphasus viridanus*, Stol., p. 220; 1, upper view, natural size; 1 a, relative position of the eyes; 1 b, front view of the head and of the falces; 1 c,

* In all figures the feet are drawn in their full lengths.

lower view of the lip and maxillæ;—(1 *a*, is enlarged three times; 1 *b* and 1 *c*, are enlarged twice).

Fig. 2. ♀ *Sphasus similaris*, Stol., p. 222; 2, upper view, natural size; 2 *a*, lower view shewing the relative length of the lip, maxillæ and falces; 2 *b*, eyes.

♂, 2 *c*, inner view of the 4 last joints of the right palpus, shewing the flagellum in the last inflated segment,—enlarged six times.

Fig. 3. ♀ *Dolomedes longimanus*, Stol., p. 218; 3, upper view; 3 *a*, position of the eyes, twice the natural size; 3 *b*, lip, maxillæ and basal joints of the palpi, enlarged three times.

Fig. 4. ♀ *Thomisus Peelianus*, Stol., p. 229; 4, upper view, natural size; 4 *a*, eyes; 4 *b*, lip, maxillæ and basal joints of palpi; enlarged twice.

Fig. 5. ♀ *Epeira cicatrosa*, Stol., p. 242; 5, upper view; 5 *a*, side view of another specimen,—both enlarged twice; 5 *b*, eyes and 5 *c*, lip, maxillæ and basal joints of the palpi—enlarged four times the natural dimensions.

Fig. 6. ♀ *Thomisus elongatus*, Stol., p. 227; 6, upper view, enlarged twice; 6 *a*, front part of the ocular portion of the thorax with the eyes; 6 *b*, lip and maxillæ &c.,—enlarged three times.

Fig. 7. *Nephila angustata*, Stol., p. 241; 7, upper view, natural size; 7 *a*, anterior part of the ocular portion of the thorax, shewing the relative position of the eyes,—enlarged; 7 *b*, front view of the ocular portion with the falces, slightly enlarged; 7 *c*, lip, maxillæ and basal joints of the palpi, twice the natural size.

Fig. 8. ♀ *Epeira braminnica*, Stol., p. 238; 8, upper view, natural size; 8 *a*, relative position of the eyes; 8 *b*, lip and maxillæ; 8 *c*, front and side views of the epigynum,—all enlarged.

Fig. 9. *Hersilia Calcuttensis*, Stol., p. 216; 9, upper view, natural size; 9 *a*, eyes; 9 *b*, front view of the ocular portion of the thorax with the full length of the falces; 9 *c*, lip, maxillæ and basal joints of the palpi;—all enlarged.

Fig. 10. *Gagrella signata*, Stol., p. 214; 10, upper view of the body, shewing the cheliceres, palpi and the coxæ, enlarged three times; 10 *a*, side view of the body, and 10 *b*, the left second foot,—both in natural size.

Fig. 11. *Gagrella atrata*, Stol., p. 213; upper view of a short, but most common variety, enlarged three times.

Fig. 12. *Epeira (Argyopes) mammillaris*, Stol., p. 236; 12, upper view, natural size; 12 *a*, eyes; 12 *b*, front view of the ocular portion of the cephalothorax; 12 *c*, lip, maxillæ and basal joints of the palpi,—all enlarged.

Fig. 13. *Epeira hirsutula*, Stol., p. 239; 13, upper view, three times natural size; 13 *a*, eyes; 13 *b*, front view of the ocular portion of the thorax and the falces,—enlarged.

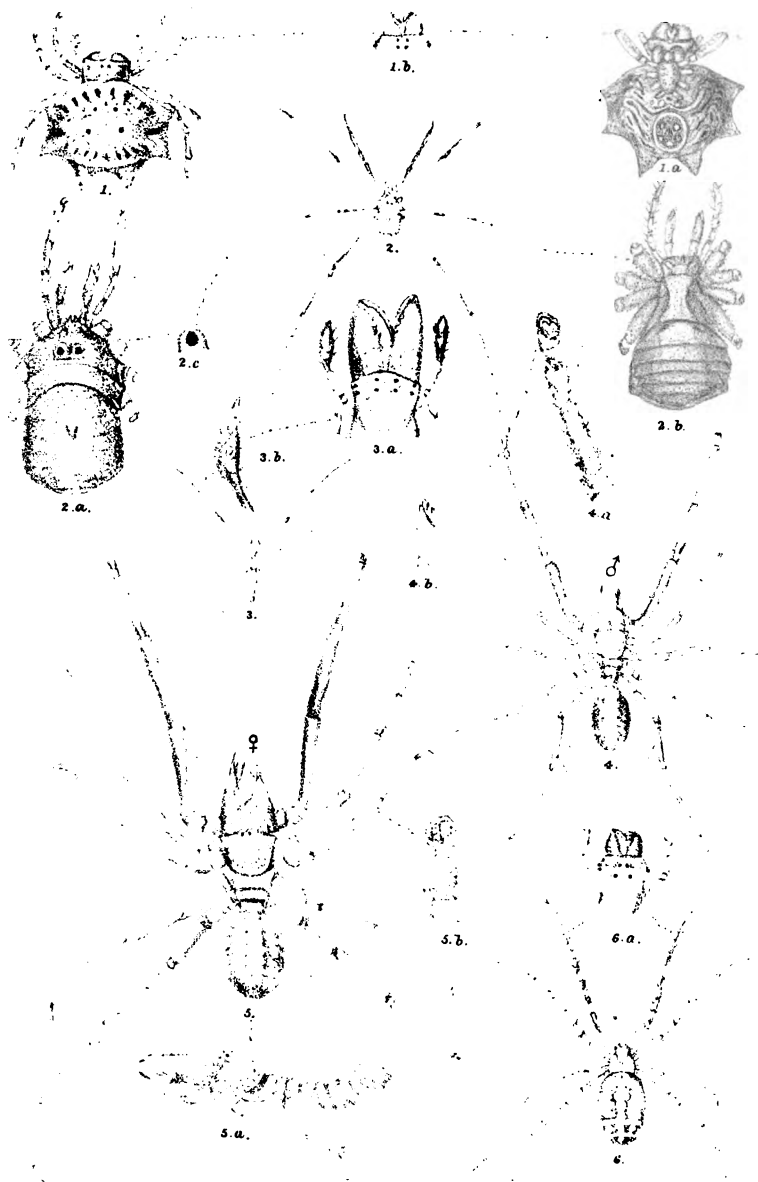
Analysis of the Khettree Meteorite with an account of its fall,
by D. WALDIE, Esq., F. C. S.

[Read and received 2nd June, 1869.]

The Meteoric stone of which the analysis is given in the following pages, fell near Khettree, Rajputana, and the sample was supplied to me by Mr. W. Stotesbury of the Topographical Survey, who at the same time communicated an interesting account of the circumstances of the fall, of which he was to some extent personally cognisant. The account I shall give in his own words from his letter to me.

"Whilst employed in making a Topographical Survey of a portion of Shekawattie in Rajputana in February 1867, (I forget the exact date)* I was out at work one morning at about 9 o'clock; I was suddenly startled by a loud report resembling that of a cannon at Khettree, the seat of a petty prince, about 11 miles distant to the south of the place where I was then working. The first report was followed by two more, louder than the first, but a little to the east of the place where I imagined I heard the first report; these three were succeeded by a regular roll, resembling musketry heard at a short distance. The day being a beautiful bright one, and no clouds to be seen anywhere, and also seeing no stones falling, I did not know what to make of this, to me, strange atmospheric phenomenon. I immediately communicated the above facts to the Editor of the *Delhi Gazette*, asking to know what these strange reports in the air meant and the cause thereof. The day after I had posted the letter, I was informed by some villagers that the day before, they heard the reports, and that a shower of Aerolites had fallen, and that the stones had been seen by them. Mr. Robert Todd, a friend of mine, and in the same survey party as myself, seeing my query in the *Delhi Gazette*, regarding these reports, wrote to the Editor of the above paper informing him that they were caused by a fall of Aerolites; he was at that time working about ten miles to the east of me, and describes the reports, &c., the same as I have mentioned already. The showers of stones, as I learned afterwards from the villagers, amounted to about 40, which fell chiefly near a village called "Saonlod," 3 miles to the north of

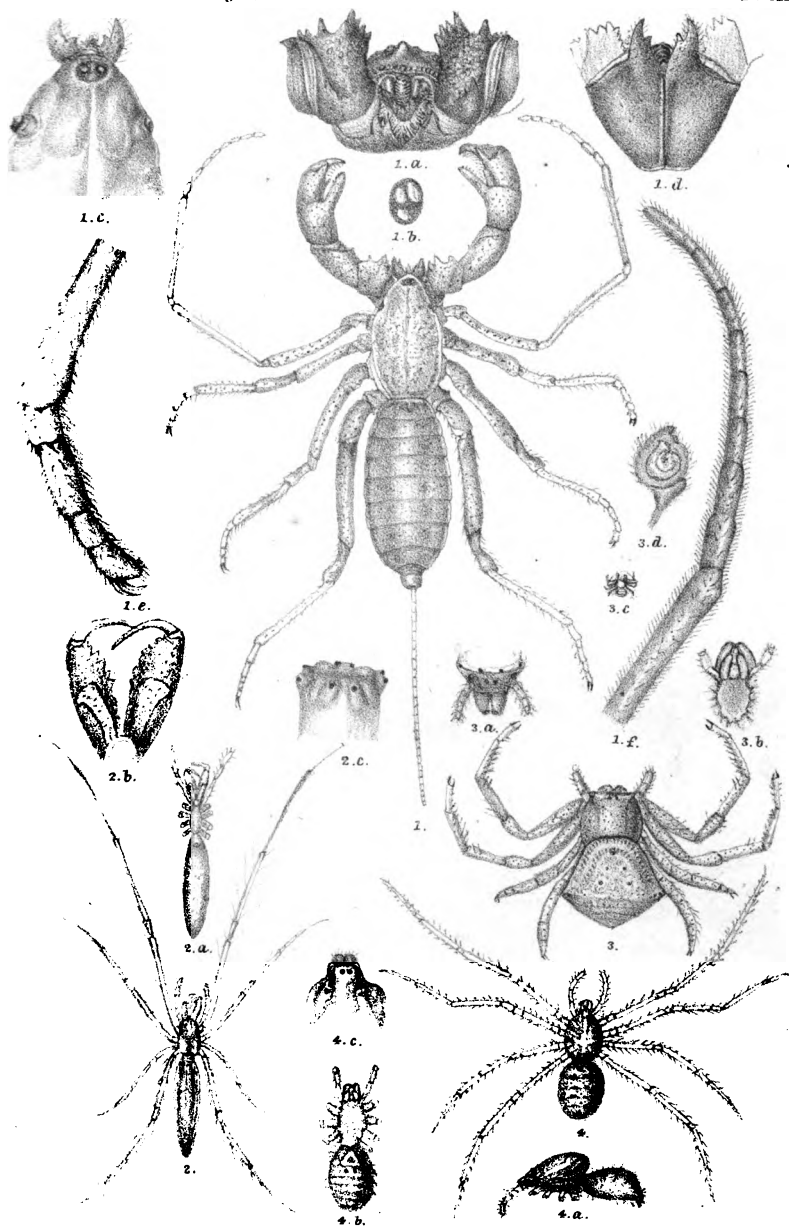
* Mr. Stotesbury has since found from an entry in one of his books that the date was 19th January, 1867.



1. *Gastracantha Cunninghamensis*.
2. *Gagrilla atrata*.
3. *Tetragnatha viridescens*.

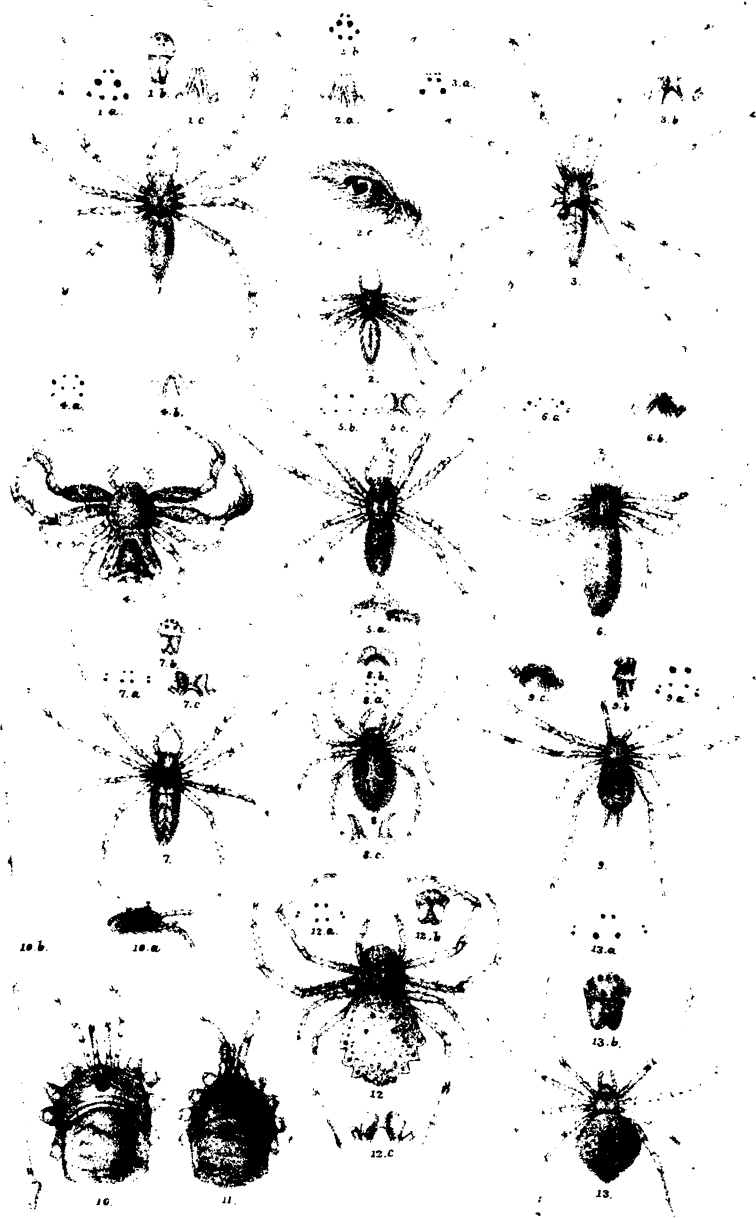
4. *Galeodes orientalis*. ♂
5. *Epeira (Argyopes) stellata*. ♀
6. *Gagrilla atrata*.

Calcutta.



1. *Telphonus Assamensis*.
2. *Meia gracilis*.

3. *Thomisus pugilis*.
4. *Scytodes propinquus*.



- | | |
|--------------------------------|-------------------------------------|
| 1. <i>Sphaeus viridarius</i> . | 7. <i>Nephila angustata</i> . |
| 2. — <i>Similaris</i> . | 8. <i>Epeira braminica</i> . |
| 3. <i>Dolom. longimanus</i> . | 9. <i>Hers. calcutensis</i> . |
| 4. <i>Thom. Pezomachus</i> . | 10. <i>Cogrella signata</i> . |
| 5. <i>Epeira cicabresae</i> . | 11. — <i>atrata</i> . |
| 6. <i>Thom. elongatus</i> . | 12. <i>Ep. (Arg.) mammillaris</i> . |
| 13. <i>Epeira hirsutula</i> . | |

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